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Newspaper Comment

THE American press, through its editorial columns, has been characterized as a fairly accurate gage of public opinion. This is, in the main, true except in those cases where a publisher uses his columns to exploit his own selfish motives or unwittingly allows them to be used for propaganda purposes.

The section of the Journal of Electricity headed "Current Comment," for the last few issues has been devoted to quotations from the editorial columns of western papers which define the attitude of these journals toward public utilities. Realizing that at the present moment the attitude of the press regarding utilities is vitally important, an attempt has been made to present both sides of various important utility questions as viewed by the editors of these papers.

Our contact throughout the West is such that we are able to bring all of these opinions into a common clearing house, choose those which seem most important and summarize them for our readers. We feel sure that such a service is valuable, for if a busy man were to attempt to read all of the material of this character which crosses the editor's desk he would have time for nothing else.

At a time when municipal and state ownership of electric utilities is one of the foremost questions in many western communities, it is well to know the arguments which are being used to beguile the voters into supporting these measures. The press offers a ready means for obtaining such knowledge. A careful examination of the material which has been printed in the "Current Comment" department for the past few months will give our readers a comprehensive idea of the arguments which are being used by the press both for and against this important question.

We recommend a careful reading of this section of the paper, for every issue contains pertinent information on the attitude of the press toward the power companies.

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The Fraternal Spirit of the West

VISITORS to Pacific Coast cities often take occasion to comment upon what they call the fraternal spirit that exists within the personnel of the electrical industry, and to speculate upon the difficulty confronting anyone coming to the Pacific Coast from the East, in obtaining for himself acceptance on an equality with the genus homo, "native son."

THERE is a fraternal spirit, it is true, a strong fraternal spirit. This spirit is characteristic of the West, of the country that the writers of movies are so fond of alluding to as the "great, open spaces, where men are MEN." Further, this spirit seems in direct antithesis to that of the great Eastern cities, where one may pass away from sheer loneliness in cities numbering their population in millions.

IT is generally agreed that the Western man is more frank, more open, in his forms of expression, his confidences, his virtues and his vices, than his Eastern brother, who is generally recognized as a somewhat "cagy" individual, who looks with suspicion upon any stranger who comes within his ken, who regards the expansive grin and the promptly extended hand as the sign manual of the bunko-steerer.

IT is a mistaken idea, however, that the fraternity of the West is exclusive. On the contrary, a man from Oshkosh, St. Louis or New York is weighed in the balance, and accepted or rejected solely upon his individual merits. Instead of shutting the door in his face, he is more apt to be given a large supply of rope to see what use he will make of it. If he gives himself a metaphorical hanging, he had better move to some fresh field and make another start, and here it may be said that those who mistake familiarity for license are due for a fall.

THE many gatherings of electrical organizations that take place during the year are striking evidences of that fraternal spirit in the best sense of the word. It is refreshing to see competitors, trade rivals, and opposing interests exchange good-humored badinage across the dinner table. They enter into the true spirit of the ancient and honorable pastime of the links. They discuss their common problems with a frankness astonishing to the stranger who hardly dares even to indulge in thoughts, when in the presence of a competitor who might be a mind reader.

NOISY—yes, sometimes. Horseplay—yes, that sometimes happens, even to the occasional perpetration of a practical joke of the slapstick order; in fact, it is not unusual to see a lot of grown men, gray heads among them, act like a lot of high school freshmen, when gathered together during an interim of relaxation from trade conferences. But they are YOUNG old men, and will be so until they die. Perhaps this effervescent manifestation of the Western fraternal spirit is what makes them so.

What Is Behind The Smoke Screen?

A wise fox will walk on the top of a rail fence to throw the hounds off his trail. Crafty Indians have been known to wade in the water of a creek for miles in order to elude pursuers. So it is with politicians. They make use of all manner of tricks in order to deceive their opponents and to befog opposition to the issue they are sponsoring.

Take the case of government ownership of hydroelectric utilities on the Pacific Coast. In both Washington and California plans are being made for state ownership campaigns which will be placed before the voters next November. In the meantime those who are concerned with defeating those measures—knowing as they do that such a procedure is but a step toward the socialization of all industry—are confronted with the task of opposing various and sundry local ownership campaigns. In California there is San Francisco with its Hetch Hetchy, Sacramento with its Silver Creek, Los Angeles and its power bond issues. Washington has its Tacoma, its Seattle and, more recently, its Aberdeen and Bellingham.

During the past fortnight these last two named Washington cities have both voted upon municipal ownership measures. Aberdeen, by a narrow margin, voted $2,000,000 in bonds for the development of a hydroelectric project on the Wynooche River. In Bellingham, by an even narrower margin, a $500,000 bond issue for taking over the local distribution system was defeated. It is interesting to note that the proponents of the Washington State Water and Power Act made a great deal of smoke over these two issues. Voluminous reports on the feasibility of the two projects were prepared by them. Speakers were furnished who painted bright pictures of what had been done in Seattle and Tacoma. And in the meantime the sponsors of the state measure, while their opponents were engaged in combating the two local measures, have gone blithely ahead perfecting district organizations for the support of their pet act.

Among the opprobrious terms which we have heard applied to the politicians who urge state or municipal ownership of such a highly technical and intricate business as the generation and distribution of hydroelectric energy is that of being "crazy." They are—like the wily fox, who eludes the farmer whose hen-roost he has looted and makes his way home to his den in safety, with the spoils of his successful raid in his mouth.

When Utility Service Includes a Day Nursery

WHERE does the service obligation of a public utility end? Shall the central station merely furnish an adequate and continuous supply of its commodity to the community and then, with the thought, "my work is done," sit back with an air of self-satisfaction? Sound common sense dictates that the central station and each and every member of its organization should be an active participant in community affairs. Civic betterment, improvements of one character and another and community activities in general furnish a fertile field for the development of good will.

Occasionally some progressive utility executive, in his desire to make his company of greater service to its consumers and the community in which it operates ventures far beyond the obligations commonly conceived as a part of utility service. Such a venture on the part of the San Joaquin Light & Power Corporation is described on another page in this issue. This company agreed to install a booth in the annual district fair and there to show the many advantages and uses of electricity. Seeking something new and unique in the way of an exhibit, it hit upon the scheme of conducting a day nursery, so that mothers who desired to visit the fair might better enjoy themselves without worrying about their children.

Nor was the opportunity overlooked for spreading the electrical idea. There were milk warmers, portable heaters and heating pads. An electric refrigerator was a part of the equipment. The older children found toy electric ranges with which to amuse themselves.

That the idea was unique cannot be questioned. That it had advertising appeal must be admitted. But above all else it created a lasting good will for the company. Utility executives will find that such unusual service as this, by its unique characteristics, will serve to cement more strongly the bond of friendship and good will between their company and the public which it serves.

The Strange Case of Vladimir, One of Your Workmen

THERE is a man in your employ. It might be that his name is Vladimir Picinich. It matters not. Vladimir has done considerable traveling, although it has not broadened him much. Traveling in the steerage of a steamer and then in a day coach 3,000 miles across the continent is far from enlightening.

He knows something about night life in the city. He learned it washing dishes in an all-night one-arm lunch counter. He does not care much for night life. His days were monotonous. After twelve hours of work every night, he had to sleep much. His room overlooked a dirty back alley. He did not open his window because the noise and glare interfered with his rest.

Vladimir has a better job now. He is digging post holes for an electric company. It is a hard job but he rides around on a truck with a lot of good fellows. His pay is better, so he has brought his wife and girl over from Poland. At night the little girl reads to him from the paper and teaches him some things she learns at school.

But Vladimir still wonders: "Why so dam' many holes?"

This is what he wants you to tell him: why so many holes; what good are they; what his work does for other people; the story of how the business grew;

how the boss, perhaps, did the same work he is doing only for less money.

He thinks perhaps this is a pretty good country. He wants to know more about it. He wants to know lots of things.

Now perhaps Vladimir does not work for you at all. But you have many people working for you who are in the same straits. They are seeking information. If you give it to them they will be better workmen and better citizens. Utilities should remember that in addition to keeping their story before the public, they must sell themselves to their employees.

The Romance of The Electrical Industry

THOSE concerned with the every-day, matter-of-fact production of electricity or in the production and sale of the appliances which utilize it are apt to forget that there is a certain romance connected with their business. They know some of the historical facts concerned with its development. They fail to realize, however, this history and this romance can be employed as a means for shaping public opinion along the right lines.

The Rocky Mountain Committee on Public Utility Information has made novel use of the story of the development of electricity. A little booklet entitled "The Romance of the Kilowatt" has been prepared and is being distributed generally throughout the grade and high schools of Montana, Wyoming, Colorado and New Mexico. In it the story of the birth and development of the electrical industry is told in a manner which will appeal strongly to the school boy or girl. There is a word about the discovery of electricity, a few lines about some of the great scientists who have been instrumental in its development to its present stage of almost universal application. Edison is linked in with the West, for it was while witnessing an eclipse at Rawlins, Wyo., that he announced plans for his electric lamp.

Then there is a subtle sales message linked in with the story of the development of some of the major appliances. In fact, no point is overlooked which will give to the future industrial and business leaders and housewives a basic understanding of the importance of electricity and of the electrical industry.

The schools offer splendid opportunities to the industry as a field where the seeds of its message can be planted early and firmly rooted. They should not be overlooked.

Why Not a Campaign for Better Lighting in the Housewife's Workshop?

THE poet is not the only one who is affected by the dampness and drabness of winter. In these months of short days and long evenings the public must depend to a great extent upon artificial illumination in order to accomplish its daily tasks. To the central station falls the lot of seeing that this artificial illumination is sufficient and that it is cheerful. This opens up a new field for business.

There have been industrial illumination campaigns, store lighting campaigns and street lighting campaigns in the various districts served by western power companies. But how about the housewife and her kitchen? Surely the kitchen—the workshop of the home—is as important to the housewife as the shop is to the industrial manager or the store to the storekeeper. Why not devote a campaign to better lighting in the kitchen?

That such a campaign has merit has been demonstrated by eastern central stations. Following a national survey in which it was brought out that the average wattage in the kitchen was but fifty-nine, the Ohio Public Service Company put on a campaign based on an installation of 150 watts. A total of 3,712 units was installed on a 30-day free trial. But one hundred and thirteen were returned. Successful campaigns have been put on in other cities and have resulted in an increase in business for central station, contractor-dealer, jobber and manufacturer.

Now is the time when such a campaign should be under way. The housewife is more dependent upon artificial illumination for her work than at any other time of the year. Western power companies would do well to secure the cooperation of other branches of the electrical industry in their respective localities and immediately organize a campaign for better illumination in the housewife's workshop.

Need for All-Year Slogan for Electrical Industry

THE trade slogan has come to be recognized as a necessity. It is used by all branches of industry and is capitalized heavily as good will. Many such slogans are admittedly of great inventory value and are so considered in the transactions of corporations and companies.

The electrical business, almost alone, has failed to select an appropriate trade phrase, one which could be easily assimilated by the public and which would serve definitely to fix in mind the value of electric applications. Some attempt has been made along this line in recent months by the Society for Electrical Development but the phrase selected has not been widely applied. This is no fault of the Society nor of the phrase but may indicate its only partial acceptance by those members of the industry most concerned.

It has been suggested that the phrase "Give Electrical Gifts" has many advantages for this purpose in that it is short, easily remembered and applies only to the electrical business. It also carries a message which is of application to everyone in the industry, for every manufacturer, jobber, dealer, central station and engineer can conscientiously promote this message and can benefit incidentally therefrom. It can be applied alike by the contractor-dealer and all merchants dealing in electrical goods and it carries with it no reflection against other equipment. While this may or may not be the ultimate solution of the situation it is well worthy of consideration.

CURRENT COMMENT

No stones are being left unturned by the advocates of municipal and state ownership in Washington. Already organizations have been formed for supporting the state ownership bill which will be placed before the voters of that state next November. While much emphasis is being placed on the state-wide movement, the past two weeks has witnessed a concentration of effort on two purely municipal projects, one at Bellingham and the other at Aberdeen. As stated on another page in this issue, the Bellingham election was lost by the municipal ownership propagandists, while the Aberdeen election went heavily in favor of city control of the power business.

Agitation for Municipal Control in Northwest

Exemplary of the interest displayed in these two elections by those in control at Seattle are the following extracts from an editorial in the Seattle Post-Intelligencer:

In both cities the enemies of public ownership are extremely busy circulating arguments.

It should be quite difficult for these anti-public ownership advocates to controvert the exceedingly simple point that rates in Seattle and Tacoma, with municipally owned competitors in the field, are much lower than in Bellingham and Aberdeen, where private companies hold a monopoly.

Seattle's friends of municipal ownership find keen interest in the Aberdeen and Bellingham elections. These will offer at least a temporary showing of the temper of the people of the state generally toward the great power fight that will be the big state-wide issue in the fall of 1924.

Should Aberdeen and Bellingham join in with Seattle, Tacoma, Centralia and Ellensburg on a state program of public ownership and conservation of our hydroelectric resources, we shall one day see all of Western Washington "tied in" with a great public superpower system.

The Post-Intelligencer trusts that the voters of Aberdeen and Bellingham will on next Saturday determine to conserve the state's greatest natural gift for all posterity.

The other side of the question is upheld by the Anacortes (Wash.) American, which roundly scores the activities of the Seattle interests in behalf of the elections in the two smaller cities. This paper says:

Determined if possible to create a sentiment for state ownership of hydroelectric power sufficiently strong to place a recently drawn bill providing for it on the ballot at the next general election with some chance of success, Seattle is sending out its officials to various parts of the state to urge the adoption of the plan formulated by the socialists in the administration of that city, backed by the property holders who are not socialists but who are wearied of the constant call for more money for power development, and who can see no relief from still higher mounting taxes unless the people of the state can be induced to take over the project, and include in it provisions for taking over all power projects or eliminating privately owned power companies by low rates made possible by meeting losses out of state or district taxes.

D. W. Henderson, superintendent of the Seattle municipal traction system and of its power department, urged the adoption of the plan before the state convention of insurance agents at Bellingham last week. He pointed out that Seattle and Tacoma are now linked together in a municipal system, and with Everett, Skagit County and Bellingham forming part of a state power district, all competition can be eliminated and the power companies driven from the district or the state if the system is extended to other parts of the State of Washington. He estimates the aggregate value of the holdings of private power companies in the state that must be taken over or "eliminated" at $100,000,000.

Under the proposed statute the state would be divided into districts, each district headed by a board of four commissioners with a salary of $6,000 each, and the commissioners to be given absolute power to take over or develop power projects in its district, with the backing of all taxable property in the district for any hare-brained scheme the board might adopt.

The plan promises to repeat on a much larger scale for the state and districts into which it may be divided, the experience of Seattle in its Skagit power development.

Indulgence in sentimentalities and the avoidance of the real facts of the case characterize the following extract from an editorial in the Seattle Post-Intelligencer:

Regard electricity as a gigantic slave, working for humanity.

So regarded, it is seen as the mightiest slave that ever strode the earth.

This gigantic slave can be made, by proper action NOW, to work entirely for mankind. To work, cheaply and well, for women in their homes, men in their factories and railroads.

Or this most powerful slave can become the standing army of a small financial oligarchy; an army keeping the people in subjection to a degree the world has not yet seen.

Most of our electrical development, thus far, is in private hands. And already we have felt the ruthlessness of the control which it effects.

But we are barely at the beginning of the Age of Electricity. We still can act to save ourselves, to benefit ourselves and our children. If Washingtonians look ahead and realize what electricity means, Washington will take charge.

Gross misrepresentation of facts would appear to be the basis for the touching picture of an Indian squaw busily engaged in preparing a meal over an electric range in the wilds of Ontario, as described in an editorial in the San Francisco Call. It is such misrepresentation that makes the task of convincing the public of the fallacy of municipal ownership doubly hard. An investigation of the conditions in Ontario brings out the fact that nowhere is electricity sold to the domestic consumer as cheaply as one cent per kilowatt-hour. We doubt if any municipality or private company in the country is able to retail electricity for domestic purposes at such rates. The editorial in question follows:

Misrepresentation of Pertinent Facts Unfair

Niagara Falls furnishes electric power to the people of Ontario, Canada. It is developed by the Hydro-Electric Power Commission, which is a government body. Martha

Bensley Bruere told a few things about electric power in a recent Survey:

"It is sent across the province to the little towns and to many of the country districts at rates which are sometimes less than one cent a kilowatt-hour. This means that it is cheaper to light a farm house with electricity than with kerosene; cheaper to run an electric cook stove than a coal range; and that vacuum cleaners, fans, toasters and washing machines, as well as cream separators, corn choppers, pumps and electric milkers, are within the reach of practically everybody. . . . It is a bit startling to see an Indian woman, even one wearing something approaching modern dress, whose blanket wrapped mother had held deer meat on a pointed stick over the fire at the tepee door, preparing to buy an electric range."

Indians in Ontario are "luckier" than California housewives. But it ISN'T luck. We, too, can have those things if we want them badly enough to understand that public ownership ought to work as well here as it does in Canada.

Municipal Ownership Is Declining

Information of a nature that will do much toward combating the wave of municipal ownership which appears to be sweeping the Pacific Coast is presented in an editorial in the Casper (Wyo.) Tribune which comments on the apparent decline of municipally owned and operated light plants as shown by the United States Census figures. The following pertinent facts are brought out in the editorial:

From a nation-wide survey by the census bureau respecting public and private ownership of utilities, these facts respecting electric light plants are revealed:

The majority of municipal plants are in towns of 1,000 population or less, where funds cannot be raised except by pledging public credit.

The municipal plants produce only 4 per cent of the electricity generated in this county, and this percentage is constantly decreasing.

The average rate of all municipal plants is more than twice as high as the average rate of all companies reported by the census.

There has been a great increase in the number of municipal plants which have shut down their generating plants since 1917.

Of the population of the United States served with electricity, the companies serve 93.8 per cent and the municipal plants 6.2 per cent. The average city tax rate in 1921 in cities over 30,000 having municipal plants doing commercial business was $19.31. The average city tax rate for the non-municipal plant cities nearest in population to the above was $15.50. Exempting municipal plants from taxation necessarily means that the tax rate on other property must be increased.

Relation of Rate Reductions and Taxes

The public is prone to overlook the important item of taxes when consideration is given to the arguments of advocates of municipal ownership. They forget that a decrease in rates effected by taking over the power business in a city is reflected by an increase in taxes to make up for those taxes which were formerly paid by the utility. This point is brought out in the following editorial from the San Francisco Bulletin:

Our "progressive" politicians blame Governor Richardson for everything untoward that happens in California. Lieutenant Governor Young, for example, in a speech denouncing Richardson's tax-reduction policy, points with pride to the fact that in Los Angeles County taxes this year have increased more than $8,500,000, or 25 per cent. No doubt the financial difficulties of the municipal power bureau contributed to that result, for in San Francisco there has been no increase.

But while laying on Governor Richardson responsibility for every increase in county taxes, why did not Mr. Young give him credit for the enormous decreases in public utility rates effected by the Railroad Commission during the current year?

Rates of various public utilities in California were reduced during the fiscal year ending June 30, 1923, more than $8,100,000, based on the 1922 revenue of those utilities, according to a statement just issued by the Railroad Commission. Gas and electric rates were reduced $5,100,000.

Railroad freight and passenger rates were reduced $3,000,000 by the State Commission and $12,000,000 by the Interstate Commerce Commission.

The statement adds:

"In addition to the foregoing reduction, the reductions made by the Railroad Commission during the previous fiscal year continued in effect, adding many more millions to the amount saved to the users of California utilities, **all of which may be traced directly to regulation of those utilities in the interest of the general public.**"

State taxes are paid chiefly by the public utility corporations, who in turn collect those taxes in rates from the public as an expense of doing business. An increase in state taxes means an automatic increase in utility rates.

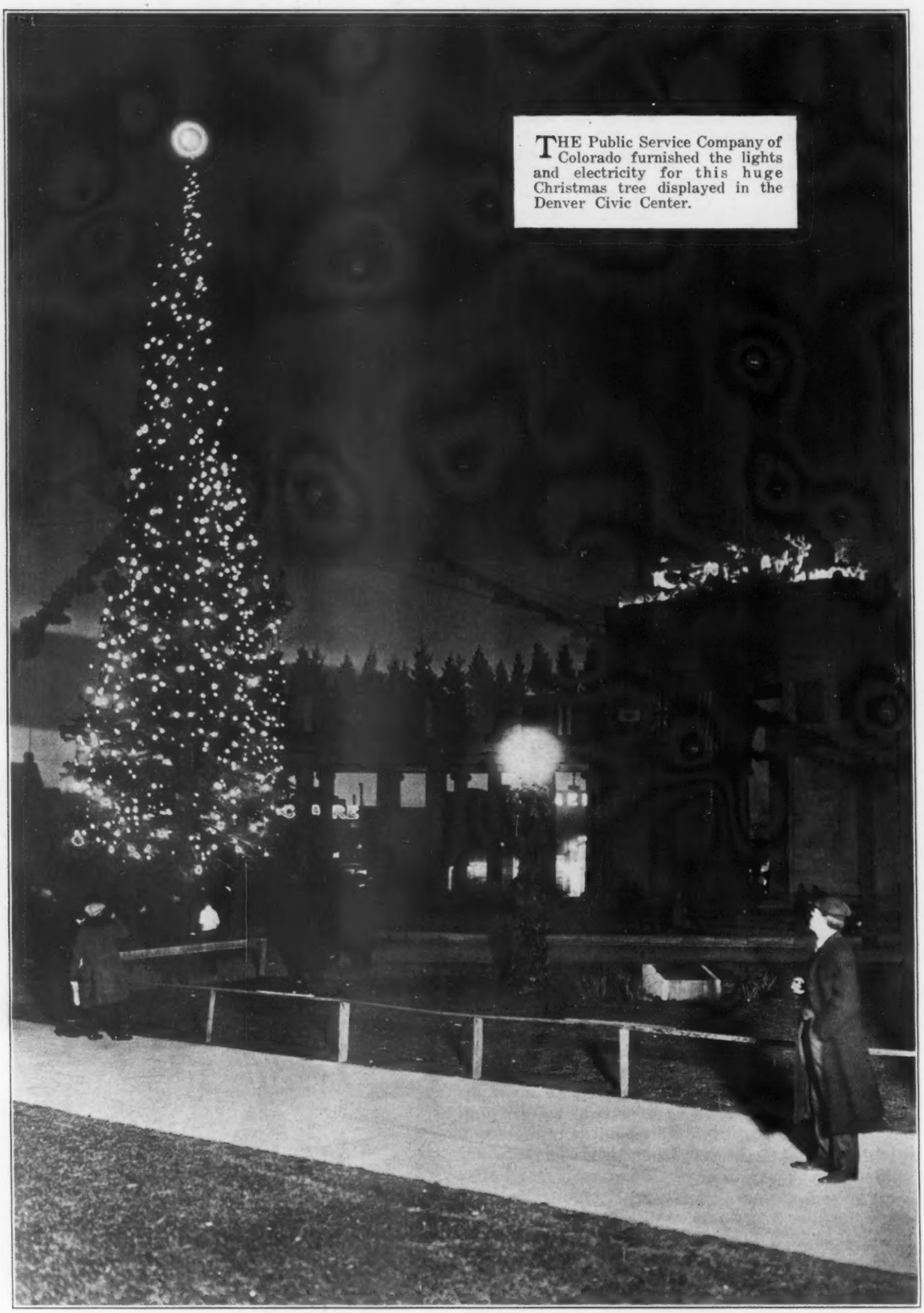
In face of those reductions, who can say that the policy of regulation of public utilities is not a success in California?

Regulation in California is real and effective and it protects the public interest.

In the Nov. 15 issue of the Journal of Electricity there appeared an item in this section entitled "Ontario Held Up as Example of Public Ownership," in which the Seattle Times was credited with the authorship of an editorial complimenting the Canadian province on the showing it had made and recommending a similar scheme for Washington. The quotation was incorrect. The editorial in question appeared in the Seattle Post-Intelligencer, which is a strong municipal ownership journal. The Times cannot be placed in this category. It is deserving of the support of the electrical industry for the stand it has taken against this question.

B. C. Employees' Magazine.

EVENTUALLY! WHY NOT NOW?



THE Public Service Company of Colorado furnished the lights and electricity for this huge Christmas tree displayed in the Denver Civic Center.

Political Adventuring with the Public's Pocket-book

By John A. Laing*
Vice-President, Pacific Power & Light Company, Portland, Ore.

WILL the general public place any faith in an organization which hires and fires a new set of executives every four years? Is politics a good business manager for a public utility? These are some of the phases of public ownership which Mr. Laing discusses in this article.

SO-CALLED public ownership and control of various essential industries provides one of the chief subjects of active political discussion today. Probably none is more frequently heard, and none is farther-reaching in its implications. The question is not new, nor are we entirely without practical experience with such proposals. The significance of the present agitation lies in the increasing diversity of these proposals and in the increasing volubility with which they are being advanced as panaceas for real or imagined ills.

On the national scale these include the nationalization of railroads, the shipping business, the express business, the telegraph, the long distance telephones, the anthracite and bituminous coal mines, the petroleum industry and the manufacture and distribution of gasoline and lubricating oils, the manufacture and sale of fertilizers, the meat packing industry, the steel industry and others in varying degrees of intensity, including last but not least the marketing of wheat at a price to be guaranteed to the farmer in advance of the planting of his crop.

Within state lines these proposals include setting up the state as universal landlord through the medium of the single tax, the operation of the banking business, the insurance business, grain elevators, flouring mills, cement plants, power plants and transmission lines, telephone lines, street and interurban railways, paving plants, gasoline stations, ice plants, bakeries, wood-yards, food and produce markets, employment agencies, and others too numerous to mention. All of these and many other industries affect the public interest to a greater or less degree, and as such await only the legislative fiat to be classed as public utilities.

While the electrical industry is immediately concerned with this movement, if we may call it that, in its relation to its own business, its members scarcely need to be reminded that as business men and as citizens of their respective communities, they are even more concerned with this program in its broader aspects and manifestations.

At the outset let me suggest that the terms "public ownership" and "public control" in this connection are deceptive and misleading. In a broad sense all property is owned by the state and subject to its control. The police power, the taxing power, and the power of eminent domain, among others, with all of the vast fields of governmental activities which these connote, suggest how completely public ownership and public control now exist. Of increasing significance in this connection is the conceded legal power of the state to expropriate on the death of an individual, such portion of his estate as the legislature in its wisdom may see fit to demand, while the power of the Federal Government also to impose an inheritance tax has been sustained. As a result we find from figures recently published that the amount of property taken annually in state and federal inheritance taxes has jumped from $40,000,000 in the year 1917 to $210,000,000 in the year 1921, the tremendous increase being due not so much to increase in wealth, as to an increase in the exactions imposed by the state and federal governments upon the transfer of such property. Apparently there is no limit to the extent to which this process may be carried, even to the point of complete confiscation, save only as the sober sense and the good morals of the community may be asserted to put on the brakes.

But in a much more tangible sense, the property of the great industries and public utilities of the country is publicly owned today. By the public we do not necessarily mean the political framework which we have built up to direct our governmental affairs, and are constantly doctoring as this or that group may momentarily persuade us to apply their pet medicine. Nor do we mean the temporary incumbents of political office, local or national, whom we revere today, perhaps, and cast into outer darkness tomorrow. Nor do we mean this or that bloc, or grouping of blocs, which by one means or another may succeed in carrying an election today only to lose it to a like accidental grouping tomorrow, in each case probably on issues so confused that no two citizens will agree in their explanation of the result.

Rather we have in mind the great body of our citizens who know little about the intricacies of politics, and crave only an opportunity to earn a decent living, to acquire a home, to advance themselves and their children in the community, to save a competence for the rainy day, and to protect their dependents against disaster by life and other insurance. Billions of dollars of such trust funds are invested by the insurance companies and by the savings banks in the bonds of the railroads and public utilities of the country. Hundreds of millions of dollars of the stocks of these industries are owned outright in

*Extracts from an address before the Pacific Coast Section, National Electrical Supply Jobbers' Association, Gearhart, Ore., Sept. 7, 1923.

small share lots by the customers and employees of these utilities. In a very real and practical sense these utilities are today publicly owned, and participation by the public in the management of such utilities is undergoing a tremendous development at the present time, resulting both in the greater democratization of these industries and in providing a vigorous stimulus to efficient management.

Private Operation Under Public Regulation

As to public control, what do we find at the present time? In the railroad industry we have absolute control of rates, of classifications, of service, of security issues, of safety devices, of hours of labor and working conditions, and to a very large degree of the wages to be paid to the huge army of railway employees. In the public utilities, we find like control of service, of rates for service and of rates of return, based not on capitalization or watered stock but primarily upon what the regulatory authority considers "prudent investment"; control of financing, of rules to prevent discrimination or improper practices, of standards of construction and operation, and of the extension of lines and service. Public control, as evidenced by the foregoing and by the direct participation of the public in the ownership and management of these industries, by its opinions as voiced or reflected in the public press, and by the statutes and numerous commissions or boards designed to protect the public interest, would seem to exhaust the possibilities in this direction. If not, or if greater control is required in any instance, the power is there to be exercised as the occasion may demand.

Storm in S. F. Daily News.

Public service corporations must take definite steps if they are to overcome this attitude on the part of the public press.

It is clear, therefore, that what is desired in the present agitation for public ownership and control is in fact neither of these conditions, but the substitution of the political or governmental organization as the business manager of these great enterprises. In other words, it is sought to transfer the responsibilities of management from regulated private enterprise in which the public interest is fully represented, to that small portion of the public whom we hire or fire every two or four years primarily with other objects and purposes in mind. Why should such a course be necessary and what good may we expect of it?

Let us assume that as to any service essential to the public interest, which regulated private industry may be unable to perform adequately, the intervention of government may be necessary and proper. Yet even here the greatest caution should be taken to make sure that the inability of the regulated private industry is not caused by artificial and unwarranted difficulties of the government's own making, and equally important, that governmental intervention will not be beset with difficulties or evils of even more serious nature. Private industry cannot be expected to function to best advantage if burdened with unnecessary restrictions and handicaps within the power of the public to remove. As President, then Governor, Coolidge once said of the railroads, "They have been so restricted lest they do harm, that they have been unable to do good."

Short-time or unduly restrictive franchises, unscientific and excessive taxation, and the encouragement or allowance of destructive competition in non-competitive fields, are instances of conditions which add to the difficulties of financing and operating the ordinary utility industry, to the resultant injury of its patrons and impaired development of the industry. Common sense would seem to dictate first the elimination of such artificial bars to progress, before the full functioning capacity of the regulated private utility can be fairly determined.

Notwithstanding these and other handicaps the great utilities of the country under regulated private management have gone ahead and served their communities adequately and well; they met every call made upon them by the abnormal war and post-war conditions and are today moving along at a more steady growth than any other industry in the country. If you will observe the industrial development on the Pacific Coast alone, you will find that hundreds of millions of dollars are today being put into new plants and facilities of the regulated private utilities for present and future needs, and under conditions which assure the highest possible efficiency and conservation of available resources. In like manner the other utilities of the country will be found to be meeting their responsibilities. Whatever other reason may be advanced, political intervention in the utility industry cannot be justified by any lack or threatened lack of adequate service or facilities.

Can Political Operation Lower Service Costs?

There remains only the contention that political operation will provide the service at lower costs. Insofar as this is based on the elimination of taxes or governmental charges now paid by the regulated companies, the fallacy of the contention is obvious. It signifies merely the saddling of this loss of revenue

upon other taxpayers and increasing a present well-nigh intolerable tax burden. Yet we are witnessing in the State of Washington today the beginnings of a most ambitious attempt on the part of certain politico-industrialists to bolster up a questionable venture in the power industry, by unloading it upon the taxpayers of the entire state, free from any of the responsibilities now carried by the regulated private industry they seek to destroy, and which now pays a large share of all the state's taxes.

As to the claim that the government can finance at lower costs than are now available to private industry, through the medium of tax exempt securities, the injustice and evils of such exemptions are becoming so flagrant and so apparent that it is not to be believed that the citizen will tolerate the condition much longer. Without such exemptions, for which you and I pay the price in our income and other tax bills, the political management of industry would pay the going cost of financing as does the private owner. Moreover, the favorable interest rates on bonds for legitimate governmental purposes will cease to be available should these purposes be generally disregarded.

As to the economy and effectiveness of governmental operations in general, as compared with regulated private management, informed opinions will not seriously differ. The responsible officials of our important industries have reached their positions, not because of their popularity or affiliations, but as the result of years of intensive training and experience, and of constant and strict accountability to competent judges of their performance. Such men do not ordinarily go into political positions; nor, when they are requisitioned into governmental service, are they encouraged or often permitted to direct their activities strictly upon business principles. Misjudged expediency of the moment, and "playing the game" with or for their political associates or superiors, are usually far more important considerations than genuine economy or efficiency. Few political campaigns have been fought, and fewer won, on the straightforward issue of impartial and efficient administration, nor has the occasional demonstration of such a prosaic fact assured the retention of capable men in public office. Experience has demonstrated, moreover, that the effect of political control upon the rank and file of those employed in such industries, is even more disastrous from the standpoint of effective public service.

Limitations of Public Ownership

Permit me to quote in this connection, from the recent address of O. C. Merrill, Executive Secretary of the Federal Power Commission, an official pre-eminent for his services to the country in connection with the conservation and administration of our federal resources, and who has been identified with governmental service for many years. Discussing certain phases of the water power situation at the present time, among others popular ignorance of the cost of bringing the developed hydroelectric energy to the current-consuming devices of the consumer, and the agitation in many quarters for so-called public ownership, Mr. Merrill said in part as follows:

> "I am not a partisan of private ownership nor of public ownership as such. It may be well that, irrespective of results, these two systems should be tried out side by side until their comparative merits can be established to general public satisfaction; but if so, their merits should be determined on a really comparative basis, with public ownership measured by precisely the same standards as are applied to private ownership.
>
> "We should not, however, overlook the necessary limitations that surround public ownership. Its field of operation is limited to the territory over which the particular public agency exercises jurisdiction. Even were it state-wide,—something not yet attempted in the United States—it still would have a field far less than many of our existing power systems already cover. It cannot, therefore, irrespective of efficiency of management, secure the full economies of group development over wide areas. This, however, is among the least of its limitations. Until the character of our political institutions is radically altered, it will never be practicable to secure and retain in public management the character of personnel which private management can secure, or to free public operations from political control."

Mr. Merrill's statement is equally applicable to the whole field of industrial activity into which the propagandists for this or that form of governmental intervention would plunge the nation. The recent experience of the federal government in the operation of the railroads, its present unsatisfactory experiment in the shipping business, the complete paralysis of industry in Italy under governmental auspices that brought about the Fascisti revolution under Mussolini, the tacit admission of the failure of the Bolshevists' program by their calling in private enterprise to save Russia from complete disintegration,—all of these and the numerous other practical tests of governmental participation in industrial and commercial enterprises, should serve as adequate warnings of what may be anticipated from any further encroachment by local or national governments in the field of private enterprise.

One of the grievances against the British Crown set forth in the Declaration of Independence is not irrelevant to this discussion. Said the liberty-loving patriots, in thus founding a new nation: "He has erected a multitude of new offices, and sent hither swarms of officers to harass our people, and eat out our substance."

Public service of the highest type is rendered by every well-conducted industry, nor are we likely to secure as effective service from a multitude of new offices, or from swarms of officers. The dangers of being harassed and eaten out of substance by political adventurers with the public's pocket-book are as real and as obnoxious today as were these evils to the colonists 147 years ago.

This western country of ours owes its development to the spur of individual enterprise and initiative. From the days of the covered wagon to the present age of the flivver and the Pullman car, it has been the promised land of opportunity and reward for sustained effort. The social value to the community of preserving this spirit and this environment we cannot afford to lose. Nor may we reasonably expect our economic possibilities to be realized, or our wealth in industry, in population, or in wider markets for natural products, to be increased and extended, once we serve notice on those we invite to come, that industrial operations henceforth are to be a function of politics, rather than the province of individual enterprise under wholesome regulation.

The Manufacturers' Agent as a Factor in the Distribution Scheme

By E. A. Kincaid

Associate Professor of Commerce, McIntyre School of Commerce, University of Virginia

REMOTENESS from manufacturing centers has made the Pacific Coast a difficult market for the manufacturer of electrical products. One of his chief lieutenants in solving his distribution problems has been the manufacturers' agent. Scouts for new business is the term that Mr. Kincaid uses in describing this important intermediary between manufacturer and consumer.

IN writing on the subject of methods of distribution some years ago, A. W. Shaw of the Shaw Publishing Company, publishers of "System," pointed out that the manufacturers' agent was at one time a prominent factor in what was known as the orthodox method of distribution. He explained that the old practice of moving goods from the hands of the manufacturer through manufacturers' agents to jobbers and thence to dealers had lost a good deal of its force due to the disposition of manufacturers to simplify the processes of distribution and sell direct to the jobber. Some years later L. D. H. Weld, head of the commercial research department of Swift and Company, wrote of the remarks of Mr. Shaw and then proceeded to show that while the manufacturers' agent is no longer so important as formerly he is still important. Mr. Weld then proceeded to give an account of the place of the manufacturers' agent in present day distribution of various lines, including the hardware industry.

Now it happens that the conditions that account for the persistence of the manufacturers' agent in the distribution of hardware are strikingly similar to those which account for the position of the manufacturers' agent in the electrical industry. Let us, therefore, consider the hardware industry for a moment. In the first place, many hardware manufacturers produce either a single article or a single line of articles. For example, one manufacturer produces nothing but saws, while another produces nothing but scissors or wrenches. In the next place, many manufacturers of hardware have but a small output and their plants are located far from the market centers of the country. Because of this last named condition these manufacturers find it difficult to keep in touch with trade conditions.

A large manufacturer of hardware, one who produces a wide variety of goods, may find it wise to maintain a sales organization to reach jobbers. If so, his sales organization will take the place of the manufacturers' agent and his sales organization in reaching the jobber. Such an organization may be powerful enough to go over the head of the jobber direct to the retail trade. Mr. Weld points out that one large manufacturer of hardware reaches the large retailers with his own sales organization and leaves the small retailers to the jobber. Where a manufacturer develops his own sales organization and finds his own line too narrow, he may arrange for his salesmen to carry related lines of other manufacturers. In this way the selling expenses per unit of goods sold from the manufacturer's own factory will be reduced.

If we transfer our attention from the hardware field to the field of electrical products, the likeness of the two is apparent. Many manufacturers of electrical products make but one article or a single line of articles. Thus, one manufacturer may turn out nothing but knife and safety switches, while another produces nothing but wire and cord. Furthermore, many manufacturers of electrical goods produce goods only in a relatively small volume, and their plants are often located far from the market centers of the country. Such manufacturers find it difficult to keep in touch with the market conditions affecting their products.. These many small manufacturers cannot afford to maintain a sales organization sufficiently large to cover the markets of the nation.

Under such conditions it is logical for the manufacturer to look to the manufacturers' agent. The latter can supply him with a ready-to-use sales organization, a very definite knowledge of the market for the manufacturer's goods in his territory, and he can, moreover, give the manufacturer some share of that market; for the manufacturers' agent knows the reputable jobbers in each jobbing center, he knows what the consumers of the territory want and require in the various lines of electrical products, and he also knows the competitive conditions and just how the business desired by the small manufacturer can be obtained. Thus it happens that for a large number of manufacturers of electrical products the manufacturers' agent is the logical intermediary between the manufacturer and the jobber.

Many of the manufacturers' agents interviewed by the writer stated that they were in a position to prove that they could take care of the distribution problems of their principals at a lower cost per unit of goods sold than the manufacturer could with his own sales organization. There is not the least question about the truth of these statements. Manufacturers know they are true, and that is just the reason why they use manufacturers' agents.

The foregoing resumé of the economic factors that account for the manufacturers' agent applies to the hardware industry and to the electrical industry.

It also applies to conditions that are more or less general throughout the country. The Pacific Coast is in no special sense an exception to this statement. On the other hand, the economic conditions that cause manufacturers to make use of the manufacturers' agent are particularly pronounced on the Pacific Coast. These factors may be stressed to good advantage:

A. There is very little manufacturing of electrical goods in the Pacific Coast territory.

B. The great bulk of the electrical products sold there come from manufacturers located east of the Mississippi River.

C. The major portion of these manufacturers have but a relatively small output and that is confined to a fairly narrow line or even to one or two products.

D. These manufacturers are not strong enough to maintain sales organizations of their own.

E. The jobbing centers of the Pacific Coast territory are widely scattered, and the expense of maintaining traveling salesmen in sufficient number to cover the great distances between cities is often out of proportion to the volume of sales realized. (See map accompanying the first installment in this series, Journal of Electricity for Oct. 15.)

F. Nevertheless, no manufacturer can afford to neglect the market of this great region because of its present attractions and also because of its potentialities.

G. The resources of the Pacific Coast territory, its buying power, and the characteristics of the consumer demand are almost totally unknown so far as the eastern manufacturer is concerned.

H. There are also certain traffic problems involving rates, classifications, routes and reshipments which the manufacturer must take into account.

I. When it comes to the selection of jobbers and the formation and maintenance of the necessary jobber contacts, the manufacturer is even less well equipped to solve the problems of distribution.

The whole situation in the Pacific Coast territory, so far as the manufacturer is concerned, may be described by one word—remoteness. Remoteness makes for a lack of definite and positive grip on the situation. It makes for an absence of that intensiveness of control, which in turn means waste and inefficiency.

It might be said that the jobber alone is in a position to supply these missing elements. Certainly the jobber thinks he is. On the other hand, the manufacturers' agent is in a position to give plausible reasons why the jobber cannot meet the situation. Looking at the subject from the point of view of the basic principles involved, it would seem that control of distribution must come from the manufacturer and be directed by him all along the line to the final consumer. Such control as will mean the sure and efficient functioning of distribution cannot be delegated with safety. No more can it emanate from the jobber and be directed from him toward the manufacturer on the one hand and toward the consumer on the other. Distribution that functions in the interests of the manufacturer must be controlled by the manufacturer. If this is not the case, why, then, have certain powerful electrical manufacturing concerns taken over the jobbing function in Pacific Coast territory by means of subsidiary corporations?

Manufacturers' agents constitute a sort of light cavalry that scouts for business and gets it because it moves quickly and effectively. They function in the interests of the manufacturer, and where they sell through jobbers alone, manufacturers' agents are always on hand to see that the jobber is also functioning properly. Such an arrangement certainly makes for that definiteness in control which is so essential to the interests of the manufacturer.

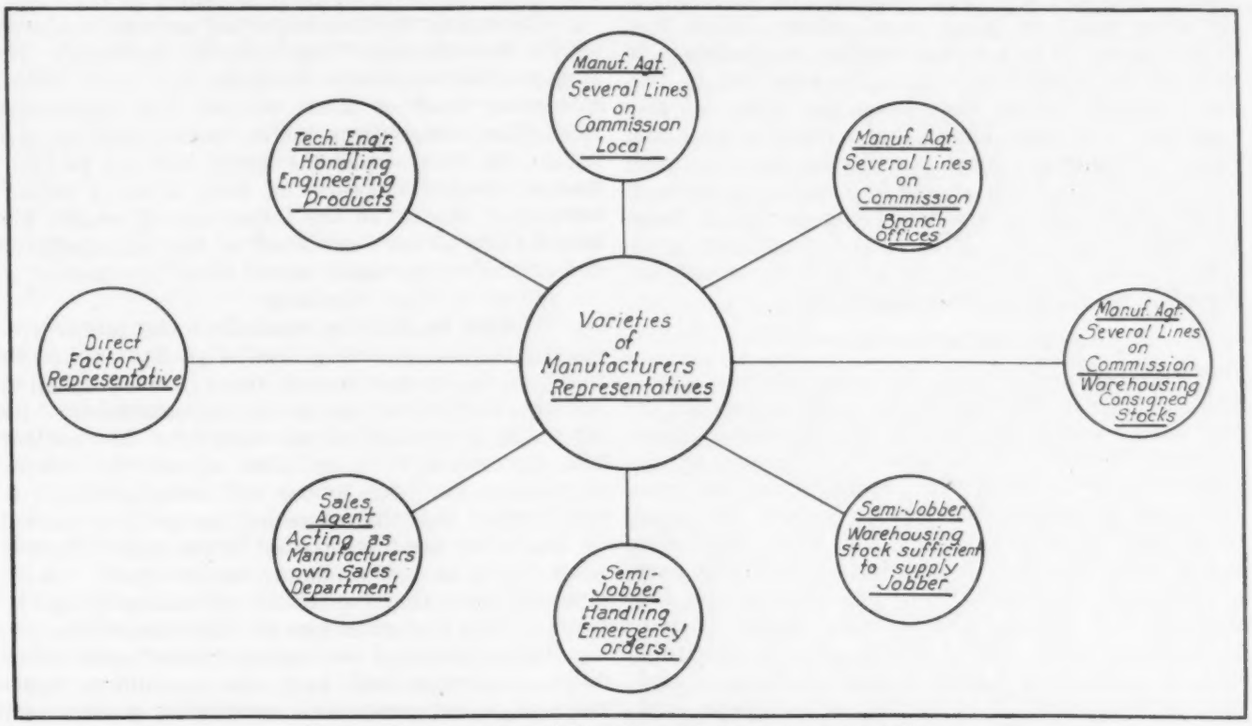

Varieties of Manufacturers Representatives
Manuf. Agt. Several Lines on Commission Local
Tech. Eng'r. Handling Engineering Products
Manuf. Agt. Several Lines on Commission Branch Offices
Direct Factory Representative
Manuf. Agt. Several Lines on Commission Warehousing Consigned Stocks
Sales Agent Acting as Manufacturers own Sales Department
Semi-Jobber Handling Emergency orders.
Semi-Jobber Warehousing Stock sufficient to supply Jobber

Diagram showing the varieties of manufacturers' representatives.

Relations with the Manufacturer

The manufacturers' agent becomes the manufacturer's sales organization, bridging the gap between the factory and the jobber. He usually carries from six to a dozen lines that have been selected with great care so that all of them together form a compact whole. These lines must fit together with a good deal of exactness in order that the salesmen sent out by the manufacturers' agent may well serve the interests of the jobbers or others to whom he may sell. Thus it happens that the manufacturers' agent is not so much concerned about the manufacturers that he represents as about the compactness and inter-relation of his lines. Thus, a typical manufacturers' agent may have, for example:

A. Portable cord
B. Metallic conduit
C. Knobs
D. Non-metallic conduit
E. Tape
F. Switches
G. Wire and cord
H. Cable
I. Boxes

Each line is, perhaps, the product of a different manufacturer, and the agent is, therefore, under contract with as many manufacturers as he has distinct lines. No two lines are competitive, for the manufacturers' agent does not frequently represent competing manufacturers.

The contract between the manufacturer and his agent is not a matter of first importance. Usually these contracts cover such matters as the territory over which the agent shall have exclusive jurisdiction, the commissions that he shall receive, exclusive representation and other matters of less significance. These contracts are usually subject to termination by either party on thirty days' notice. While this might appear to be a serious matter, in practice it is not, for the agent relies upon the good will of the manufacturer rather than upon the terms of the contract. The agent knows that a manufacturer can break his contract almost at will with impunity, and he is willing that this should happen if his services to the manufacturer are not strong enough to keep the contract in force. If there is not sufficient good will to make the relationship vital, then a contract certainly would have little significance.

Extent of Territory

The territory in which the manufacturers' agent has exclusive selling rights for a given product or line varies with a number of considerations. Generally the territory of the agent is large because the population is scattered over several states and concentrated at certain well known centers. In some cases the territory includes the three coastwise states, while in others it may include only that part of California dominated from Los Angeles and the hinterland of Arizona and Nevada. Again, it may include the three coastal states and the territory back of them, thus taking in part of Montana and part of Wyoming, all of Nevada and Arizona, and part or all of New Mexico. Just what area will be included in the manufacturers' agent's jurisdiction will depend upon:

I. The way in which the general sales agent of the manufacturer has laid out the whole country. It may happen that there is a territory dominated by Denver with an agent there and still another dominated by Minneapolis.
II. Railroad rates and ocean transportation facilities.
III. The nature of the product.
IV. The distance from Pacific ports to the remoter parts of the territory.
V. The population included within the territory and the volume of sales to be had from that number of people.
VI. The facilities and capacity of the agent's sales organization and his knowledge of his territory. As business expands, the boundaries of the territories assigned to a given agent may be altered.

Services to the Manufacturer

First and foremost, the manufacturers' agent undertakes to serve the manufacturer in the chief problem, that of getting distribution of his factory output. Manufacturers' agents maintain that they provide this service and that they do it with more efficiency and at a lower cost than any salaried substitute could possibly do it. They will assure you that compensation in the form of a commission on sales will invariably get better results for the manufacturer than a factory branch under a salaried representative. In the next place, the manufacturers' agent will take pains to explain that he is a specialist who concentrates all his energy on a fairly narrow line of products and thus becomes an expert in all problems relating to the distribution of those products. Again, he will have a staff of highly specialized salesmen who know the territory and cover it with minute care; and it is true that the more competent manufacturers' agents receive frequent and elaborate reports from their salesmen in the fields.

There are yet other important services rendered by the manufacturers' agent to his principal. He may provide warehouse facilities and carry either emergency stock or stock certain lines somewhat fully, filling orders from jobbers throughout the territory. In many cases the agent does not perform this service and will carry no stock at all or merely emergency stock. In the latter case all orders obtained from jobbers are filled by the manufacturer and shipments are made direct from the factory to the jobber or other customer.

It must be kept in mind that the jobber frequently carries competing lines of goods. In view of this fact, the manufacturers' agent is in a position to render effective service to the manufacturer. He often has a number of salesmen who do excellent sales promotion work and thus expand the volume of business for both jobber and manufacturer. It may happen that the competing line or lines carried by the jobber are unsupported by any such effective work on the part of a manufacturers' agent. If so, it would follow that the jobber will naturally tend to favor the line that gives him the best volume of sales.

The salesmen of the manufacturers' agent often do most effective field work with consumers, engineers of power companies, architects, dealers and industrial corporations. The results of all such work

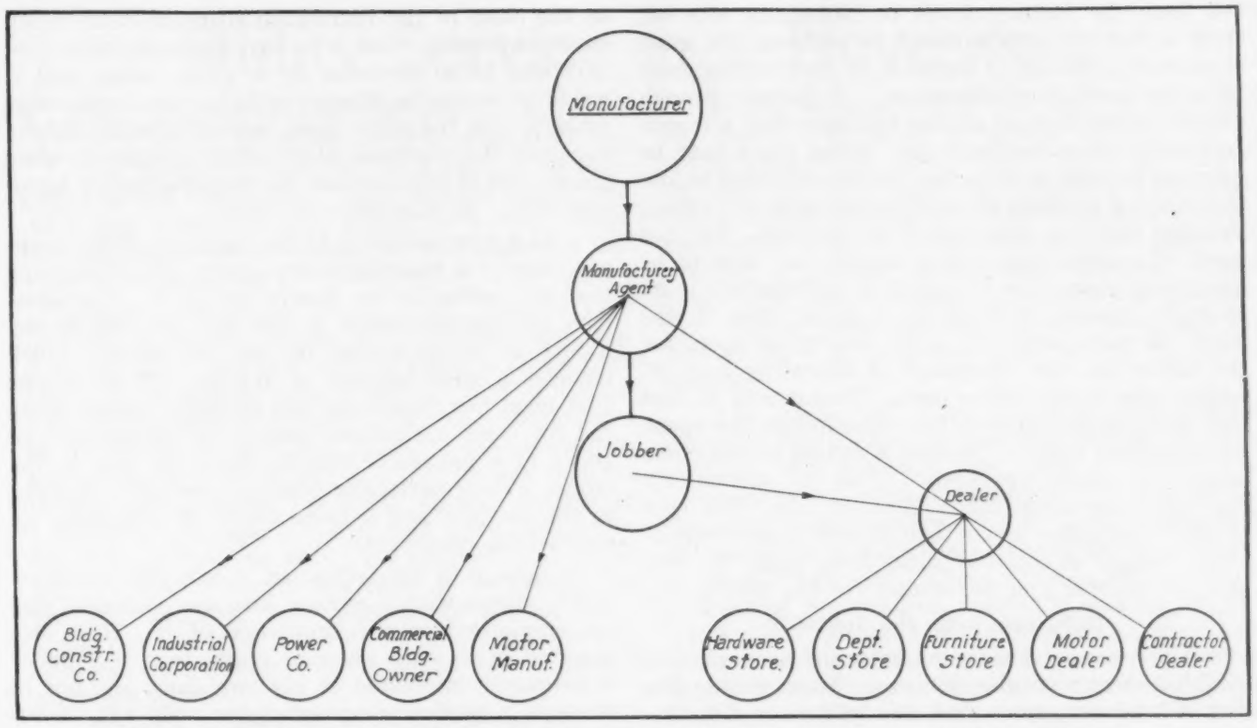


Diagram showing the place of the manufacturers' agent in the distribution of electrical equipment.

are felt in the increased sales made by the jobber, and he thus comes to understand that the manufacturers' agent is one of his best allies. In this connection it might well be explained that this work is carried on by the manufacturers' agent for two very good reasons. His own commissions expand and his standing with his principal is improved as the volume of sales made in his territory is increased. But fully as important, if not more so, is the good will that is built up for the manufacturers' agent. Certain of these agents in Pacific Coast territory have carried on this work so effectually that one might very well assert that the loss of a line or so by the action of the manufacturer would not materially affect the relation between the jobber and the manufacturers' agent. The service and the backing that is given to his lines by the salesmen of the agent become so valuable to the jobber that he will change lines rather than lose the connection and the support of the manufacturers' agent.

Where manufacturers' agents have realized the possibility of doing effective field work in behalf of the jobber's volume of sales as well as in behalf of the manufacturer whom he represents, their position in the trade has become well-nigh impregnable. If the tie between the manufacturers' agent and the jobber rests upon this service and sales promotion work by the agent, few manufacturers are strong enough to take their lines away from the agent in the face of expanding sales that may even justify a factory branch. Thus it has come about that the more alert among the manufacturers' agents have developed such firm connections with their own customers as to have a sort of insurance against the risk of losing a line because of the vaulting ambition of the manufacturer.

Manufacturers' Agent vs. Factory Branch

The disposition of the manufacturer to break away from distribution through an agent and to accomplish this work through a factory branch is generally the result of a feeling that the existing volume of sales, as developed by the manufacturers' agent, is good, so good in fact that the volume may be much better if a factory branch is established. The facts of the matter sometimes run just counter to this fond expectation, for in breaking connections with his agent the manufacturer at least incurs the risk of irritating all the jobbers and others to whom his agent has been selling. That there may be such irritation is by no means far-fetched. Reference has been made in previous articles to the fraternal spirit that exists among distributors in Pacific Coast territory. This is certainly a factor that has to be reckoned with and the various distributors know it. For this reason they spend no little time and thought in fostering this relationship. But quite aside from this, it is necessary for the manufacturer to recognize the strong element of good will that may exist on the part of jobbers toward manufacturers' agents. This good will is the result of the field work of the salesmen of the agent, and the jobber knows that it means enhanced sales and increased profits for him.

To be sure, not all manufacturers' agents are in a position to carry on such active and effectual field work, and not many of those who are in a position to do so have utilized the opportunity. The majority of manufacturers' agents are in a class that has not made the most of the fact that they are on the ground while the manufacturer is far away. Thus it comes about that many manufacturers' agents are practically defenseless when confronted with the manufacturer's plan to do away with an agent and

sell from the factory direct to jobbers or else sell from a factory branch direct to jobbers. In most cases such a change in methods of distribution must be given careful consideration. A factory branch cannot expect to hold all the business that a manufacturers' agent has built up. Some years may be required to build it up to the volume obtaining before the changed methods of distribution came into effect. Perhaps the step may never be justified, for the costs of maintaining such a branch are sure to be considerable and the unit cost of distribution must be much greater, at least for a period, than it was when the manufacturers' agent was relied upon, for the latter has the advantage of allocating costs of selling over several active lines. Thus it may be said that other manufacturers help to maintain the agent and therefore support the cost of selling for each one whom the agent represents. This is particularly true where an agent takes on a new line. The cost of his organization must then be met from commissions realized on sales of older lines until the new line has become a money-maker for the agent.

Relations with the Jobber

Wherever possible, manufacturers' agents sell to established and regular jobbers. They pursue the line of least resistance, and this will mean distribution through regular jobbers wherever that outlet is available. In some cases the policy in this matter will be determined by the attitude of the manufacturer, for he may be inclined to do business with none other than regular jobbers. In this event the manufacturers' agent becomes a regular; but in event no jobber can be induced to take on a line new to the territory, the manufacturers' agent must form contacts with jobbers who are a shade off color with respect to regularity. Where this is impossible, then the agent must turn to dealers or consumers. The practice here depends upon the nature of the lines which the manufacturers' agent carries. It not infrequently happens that the jobber is already carrying some standard line upon which he and his salesmen and his trade are fully "sold." In this event the agent will meet with little encouragement.

It would not do to give the impression that all of a manufacturers' agent's dealings are with jobbers. As a matter of fact, they may sell to power companies, motor manufacturers, motor dealers, pump dealers, industrial corporations and to others. Just how the agent sells will depend upon the nature of his line, but what has just been said with respect to the jobber certainly obtains insofar as the so-called jobbing lines are concerned.

In deciding just what jobbers he will deal with, the manufacturers' agent may have some complex problems to work out. It so happens that in some localities the jobbers are found in two camps, association jobbers and those who are not in the association. It sometimes happens that there is a real preference on the part of the agent to do business with the association jobbers only, but such a policy may be unwise in other respects, due to the fact that adequate distribution cannot be had where the association jobbers are too few in number. In this event the manufacturers' agent must work out his policy on the basis of the immediate situation with which he is confronted; that is to say, the association jobbers may be so powerful in a given place that it would be unwise to attempt to do business with other jobbers. On the other hand, non-association jobbers dominate the wholesale distributing business in some places, and in this instance the manufacturers' agent may safely do business with them.

As a representative of the interests of the manufacturer, the manufacturers' agent often maintains that the jobber is but poorly equipped. His salesmen are not specialists in any one line and in the nature of things cannot be, for the jobber's stock includes a large number of articles. It is obvious that good merchandising and effective selling often call for such specialized knowledge; otherwise the goods of a particular manufacturer are lost in the crowd. Their particular qualities are never brought to the surface, and a given article or line loses its commercial personality.

Counter to this situation stands the manufacturers' agent with a narrow line and salesmen who are specialized in the knowledge of it. It is also asserted, with some show of truth, that the jobber is primarily interested in his own sales and not in those of a particular manufacturer. He will, therefore, push the lines that give him the best volume of sales, other factors being equal, and this may mean that the lines of certain manufacturers receive little or no consideration. Where such a condition exists, the manufacturers' agent of the better sort is in a position to carry on field work that will build up the demand for a given manufacturer. From this it is reasoned that it is never to the interests of the manufacturer to attempt to eliminate the manufacturers' agent and sell directly to the jobber.

Where the manufacturers' agent carries a stock in his own warehouse he is in a position to supply the jobber with goods on short notice, and here we have yet another way in which the manufacturers' agent ties in with the jobber. In Pacific Coast territory it is not uncommon for a manufacturers' agent to have a warehouse fairly well stocked with the goods that he seeks to market for the manufacturer. The latter is generally producing at some point far removed from the field of activities of his agent, and it is not always possible for the jobber to wait for a shipment from the factory. Here the manufacturers' agent steps in and takes care of the situation to the advantage of both jobber and manufacturer. In the case of those agents who regularly supply the jobber's needs out of the warehouse, the jobber is spared the necessity of buying in large quantities and thus unduly increasing his inventory and tying up his working capital for considerable periods of time. It is clear that the maintenance of a warehouse by the manufacturers' agent serves to discourage the manufacturer to take any steps looking to the opening of a factory branch. The manufacturers' agent able to take care of jobbers out of his own warehouse is doing about all that a factory could do, and, in addition, he is concentrating his selling forces upon the lines which he carries in a way that no factory branch could be expected to.

Utility Service in a New Role

VERY often there is injected into the activities of a utility an opportunity to offer a service not commonly conceived as a part of its obligation to the community. Such unusual service, by its unique characteristics, serves to cement more strongly the bond of friendship and good will between the utility and the public which it serves.

Prior to the annual Fresno, Calif., District Fair in 1923, A. Emory Wishon, vice-president and general manager of the San Joaquin Light & Power Corporation, decided to have a display that would be sufficiently different to attract unusual attention and at the same time be of real benefit to the community and to the visitors to the fair. With this thought in mind, he arranged for a day nursery for babies and for the younger children who were brought to the fair by their parents. He believed that a day nursery would be of double value as an exhibit, for not only would it have advertising worth, but it would perform such a useful function for the parents who attended the fair that it would have a decided good will reaction.

In order to establish the name of the San Joaquin Light & Power Corporation in connection with the nursery, large signs in the form of the company's advertising shield were mounted on posts which were arranged to represent high tension transmission poles. A large cloth sign announced that the nursery was operated by the company and that there was no charge for the use of the privileges. Other signs contained invitations to enter and to leave babies in charge of the attendants.

The nursery occupied a ground space 75 ft. by 50 ft., was of rustic construction and prettily decorated, and was located under a group of trees on the main street of exhibit buildings. Mothers with babes in arms or toddlers clinging to their skirts were invited to leave them at the booth, where a doctor, trained nurses, and professional kindergarten teachers were constantly on hand. This was expected to be of particular assistance to those mothers who were obliged to bring their children with them. It was recognized that a parent who was preoccupied with the care of children would not be able to devote the fullest attention to the exhibits and that thereby the maximum value of the fair might easily be lost.

At one end was partitioned off the real nursery, in connection with which was a mothers' rest room. Each mother registered her name and address and was given a numbered tag, the duplicate of which was pinned to the baby's dress. Around the nursery was arranged a row of cribs, for the little folks that wanted to sleep. Certified milk was kept in a Frigidaire electric refrigerator. Bottles and nipples were on hand, with electric bottle warmers and sterilizers. The room was kept warm with electric heaters. So popular did the nursery prove that three nurses were kept almost constantly busy, many mothers leaving their little ones here for hours at a time.

At the opposite end of the booth a play yard was installed, 25 by 25 ft. square, covered with a foot of clean beach sand. Here the toddlers up to five years old were cared for. Mothers were registered here, too, and the tots were tagged. See-saws, wheelbarrows, buckets, spades, and other toys were provided, while the kindergarten teachers devised games, told fairy stories, and supervised the play. Toy electric stoves were installed and every day the little mothers of tomorrow had lessons in biscuit making.

The San Joaquin Light & Power Corporation is featuring in its advertising a brownie-like elf which is called "Kid Kilowatt" and which is incorporated generally in the company publicity. Posted around the sides of the nursery were pictures of this little fellow combined with Mother Goose rhymes, written about Kid Kilowatt. These rhymes, in addition to interesting the children, carried a message of electrical utility and showed the company's name at the bottoms of the cards. Another feature of interest to the children was a large brown bear which had been captured by company employees in the mountains near one of the construction camps.

An emergency hospital was conducted, under the supervision of Dr. C. A. Mordoff, head of the company's medical department, and during the week of the fair 40 patients were treated at the hospital. The nursery took care of 150 babies, all of bottle age, while more than 400 toddlers were checked into the playground, 110 being checked in during a single afternoon.

Chairs in the main court were at all times occupied by weary mothers. Women crowded into the nursery in such numbers to catch a glimpse of the sleeping infants that the nurses could work only with difficulty, and it was finally necessary to curtain this department off from the public. The real attraction was the play yard, the little folks at play being a never-ending source of entertainment to the grown-ups. Of the 91,000 persons attending the fair, there were few who did not watch the kiddies at play.

This day nursery, in the opinion of Mr. Wishon and his organization, was a far greater success than had been anticipated. The novelty of it had news appeal and much publicity resulting. While there was no direct advertising, the use of the electrical appliances was splendid indirect advertising, and the Kid Kilowatt posters carried an advertising message that registered because it was uniquely handled. Above all else, there was organizational satisfaction in the rendering of a real service and beyond any question public good will was strengthened, as was manifested by the many expressions of appreciation. A letter of thanks from the fair management declares that the day nursery was one of the best of the fair's attractions.

The Kid Kilowatt Nursery is to be a permanent institution. Mr. Wishon plans to enlarge it next year and to introduce many new features.

Now Kid Kilowatt is a
queer little elf
Who makes the bright
lights burn all by himself,
He does washing and ironing,
and yet never tires
While he dances and prances
along on the wires.

SAN JOAQUIN LIGHT and POWER CORPORATION

Jack was nimble,
Jack was quick,
Jack jumped over
the candle-stick,
But Kid Kilowatt
is a faster sprite
Who jumps up to
the electric light.

SAN JOAQUIN LIGHT and POWER CORPORATION

Kid Kilowatt has come
into the house.
Kid Kilowatt is as still
as a mouse.
Do you suppose that
he means any harm?
No – he is here just to
keep baby warm!

SAN JOAQUIN LIGHT and POWER CORPORATION

WHEN the San Joaquin Light & Power Corporation decided to participate in the annual Fresno district fair, it sought a new field of service. The idea of a free day nursery for the use of mothers who brought their children to the fair was conceived. It met with immediate success and the good will which resulted has amply repaid the company for its efforts.

ONE of the features of the company's display was the novel posters depicting the antics of Kid Kilowatt. Samples of the posters are shown. Kid Kilowatt has now become an integral part of the company's advertising. Other views show King Kilowatt, a big bear caught in the High Sierra, and several views of the nursery and some of the inmates.

Can the Electrical Dealer Sell Radio?

By A. E. Schefframan
Radio Specialist,
Newbery Electric Corporation, Los Angeles, Calif.

THIS article is of particular interest to electrical dealers because of the growing importance of radio sets and supplies as merchandising items and the tendency towards the invasion of the field by non-electrical firms.

IF the electrical dealer is to be successful in radio sales he has to readjust his selling methods. The man who sees the possibilities in radio, and has the vision to see into the future, can and will make the grade in radio, provided he is a business man instead of a scientist. While one should be technically familiar with his line, after all it is salesmanship that really counts; that and a knowledge of buying **right.**

One can always hire a technical man, but one cannot always get a real salesman. Radio has gotten to the point where long-winded technical "dope" on a set will not put that set into the home. The prospect must be worked on by a clever salesman who will paint a word picture of what that set will do in the prospect's home, who will tell him how much of a necessity it really is, and who will make the prospect want to buy his set.

The average electrical dealer is a technical man who has gone into business rather than a business man who has been trained technically. It is probably this fact that has cost the electrical dealer (as a whole) the appliance end of the electrical business. And just as easily will the radio business go to the music houses, department stores and specialty shops, if the electrical dealer doesn't buckle down to it and fight!

Radio Parts or Radio Sets?

This article does not aspire to dictate the class of goods that the dealer should handle. If the electrical dealer prefers to handle parts, let him do so. If he prefers sets, he can decide on what he will carry. If he wants to handle both classes of radio goods, he can hop to it.

Those who do a "cheap" class of business will have to handle radio parts on the same basis. One can buy cheap parts and do fair work with them, but handling cheap parts means that buying has to be carefully done. What a dealer is really after in parts is a quick turnover, and a dependable source of supply. Buy this character of merchandise from hand to mouth, until it is learned just exactly what the trade demands—even then it is necessary to go easy on buying, because parts have an annoying habit of becoming obsolete in a month. New hookups call for new parts, and one has to learn to be a good judge of what the trade will call for.

If a dealer is in a location where prices talk, he must be prepared to handle radio parts business on a cutthroat basis. This is a hazardous game, and one that only a good business man should try to play. Cut prices in parts may always be expected and unless a dealer's general business is conducted along the same lines, radio parts may be slow moving.

A dealer who handles radio parts must have a salesman behind the counter who knows radio material. Such a man will meet the customers with a pleasant smile and will know how to raise a customer's purchase by showing him, in a tactful way, the new apparatus that has just come in. He will, too, be sure to ask his customers to come back and let him know how their purchase pleases. He will be first of all a salesman, and secondly, a man who enjoys radio—who reads all of the trade magazines, keeps posted on new developments, and gets a real enjoyment out of radio sales work. A salesman of that type will make friends for any store, will build up a good trade, and will be the least expensive in the long run.

Radio sets, properly chosen, are a splendid line for the big dealer to handle, for many reasons. For one thing, the worthwhile, stable manufacturers protect their markets; they give exclusive propositions to good merchandisers, and they see to it that cutthroat competition is either entirely eliminated or greatly minimized. An electrical dealer who is considering the handling of radio sets should make it his business to seek quality sets; investigate the various makes until he has found something suitable to his trade, and then should handle that line exclusively.

Stocking Radio Sets

The reason for suggesting one line of sets and sticking to them is that selling sets is not at all like selling parts. One must be able to deliver service with a set, whereas one assumes no responsibility for parts: if the latter do not work in the customer's circuit, a dealer is not to blame. A set must demonstrate to the customer that it will work, and work satisfactorily, and it takes a salesman familiar with his line to sell sets successfully. He must **know** radio.

Most of the modern makers of radio sets have a complete line—their sets range from low priced ones to the high priced, showy cabinet types. Consequently, if a dealer has made a wise choice in makes, he should be able to deliver a good set within each prospect's price limit. In addition, by specializing in one line, he is enabled to buy in better quantities, thereby putting himself in line for better discounts on purchases.

A dealer must by all means consider carefully whether he wants to buy direct from the manufacturer or from his local jobber. He must look for lines that have exclusive distribution, because thereby he

will be assured of protection from indiscriminate competition. He can afford to spend money to create a demand for a radio set that he knows he is protected on. He must get the right line, and then push it to the limit.

A dealer should not buy any line of merchandise too heavily. The set of today may be vastly improved tomorrow. Dealers must look for turnover rather than for anything else. They should be careful not to overstock. Above all, it must be borne in mind that the radio business is a seasonal one, and that it does not pay to carry a stock of goods over from one season to the next.

Selling Sets

A few pointers on what is necessary to successful radio sales will be of timely mention here. The ideal way to sell radio equipment is to be able to work on the prospect without interference. Owing to the nature of the business this applies with particular force to the sale of radio sets.

A good demonstrating room should be provided where radio sets may be displayed and demonstrated and where sales may be closed without interruption. A nicely furnished room, with an attractively grouped display of various sets, and a good glass-paneled door to close is a big asset in this sales work. If the room can be spared by all means prepare a radio studio or demonstrating room and use it in selling sets. An aerial wire and a ground wire should be run right in to the room and the job concealed so that these wires are not conspicuous.

The idea of the demonstrating room bears out the old-established custom among the music trades of using booths to help the sale of phonographs. Adequate ventilation must be provided so that prospects do not feel other than comfortable. A good plan is to have a noiseless exhaust fan in the ceiling.

The room should be made as attractive and as homelike as possible. It should be remembered that women buy things for the home, and the only reason they have not yet bought radio equipment is because sets heretofore sold have not been designed as attractive pieces of furniture, with a minimum of dials, switches, binding posts, and the like. Now that good and attractive cabinet sets are made women will become purchasers. The carefully planned and attractively executed demonstrating room will be of assistance in selling the female buyer.

If a dealer is near a good broadcasting station he should be sure to have a set operating in the doorway, with a loud speaker, whenever a program is being broadcast. A minimum of volume, with a maximum of clarity produces the best effect. Care should be used to avoid a blasting or distorted loudspeaker. Probably more harm has been done by the improper use of loudspeakers on sidewalks than by any other agency.

Windows must be dressed carefully and seasonal helps used. If the world's heavyweight championship is being fought an announcement that fight returns will be received by radio at your store will draw a crowd. If a big government official is to speak over the radio, it will interest many prospective buyers who may become steady customers.

The cost of advertising in relation to sales should be carefully governed. Good business demands a ratio of about one to 65. In other words, if monthly sales of radio are $6,500, a dealer's radio advertising should approximate $100 per month. If located in a big city and newspaper space is too high in price, some other method of publicity can be used.

The best business builders are the satisfied customers. Radio bugs will talk to their friends of the service a dealer gives and will boost for him if his merchandise and his service deserve boosting. It is well to promise less than a set will perform.

It is not well to sell prospects on long distance reception for many reasons: if effort is made to sell on long distance, a dealer must demonstrate long distance, and far-off stations never do sound like the good local ones. Prospects should be sold in the store, rather than in the home, so that the curse of night work may be taken out of the business. If prospects are sold on the idea of long distance, it means that a skilled salesman will have to work nights and, consequently, he will not be available during the day.

The dealer who gets the right line of sets to handle and who equips his store to sell the line; who knows how to pick a good salesman and who will train the salesman to sell along broad policies that favor the customer at every point except where it conflicts with good business principles; the dealer who can paint word pictures of the educational and entertainment values of his radio sets; who buys carefully and on a sound basis, can and will make a go of the radio business.

Electricity Replaces Man-Power in India

THE reluctance of the inhabitant of India to adopt anything new has long been the reason that the country has been classed as a backward nation. The change from the old method to the new has been extremely slow in India, due mostly to the natives' tendency to hold to the practices of their forefathers regardless of the merit of the old and the new methods of accomplishing the same result.

Because of the low cost of living and the low standard at which the natives live, labor has been obtainable for an extremely small cost. This fact, too, has mitigated against the adoption of labor-saving devices that are used in other parts of the world. For centuries the hand-pulled punkah has been the instrument that has been used as a fan in India. Illuminating has also been done with antiquated instruments. Cocoanut oil lamps have been the means of securing light at night for hundreds of years.

Despite this conservatism of the people of India, according to H. A. Doolittle, American consul at Madras, the electric fan and the electric light have shown a marked tendency to replace the punkah and the cocoanut oil lamp. The number of both private and municipal installations in the smaller towns is rapidly growing and a greater interest is being shown in electricity in all areas.

The COAST Outlet
ELECTRICAL CONSTRUCTIONISTS' and DEALERS' NEWS

Electrical Construction

By E. Earl Browne

COMPETITIVE conditions and the resultant need for increased production and reduced manufacturing costs have occasioned closer attention to all factors bearing on production. Improved layout of buildings, progressive travel during manufacturing process, with consequent reduction of lost motion, placement of employees at their working stations and other factors have been seriously and thoroughly investigated. One of the most important items of consideration in recent years has been that of illumination as applied to factories and machine shops. Buildings have been constructed to better take advantage of the natural light and greater attention has been given to the matter of artificial illumination. The illumination engineer has been developed and has done notable work in solving many of the problems of restricted output.

Illumination engineers have made special studies of each individual problem, giving thought to the character of the work, speed of operation and nature of material handled, together with a consideration of the natural hazards of the particular process or business. The placement of lighting fixtures has been determined scientifically by use of measuring instruments which have indicated the proper degree of intensity necessary for the most efficient and safest performance of the employees' labor.

So satisfactorily has the illumination engineer's function been performed and so thoroughly has the general industrial world become convinced of the value of better illumination that correct illumination is now considered a vital necessity and a distinct asset to all manufacturing and machine shop con-

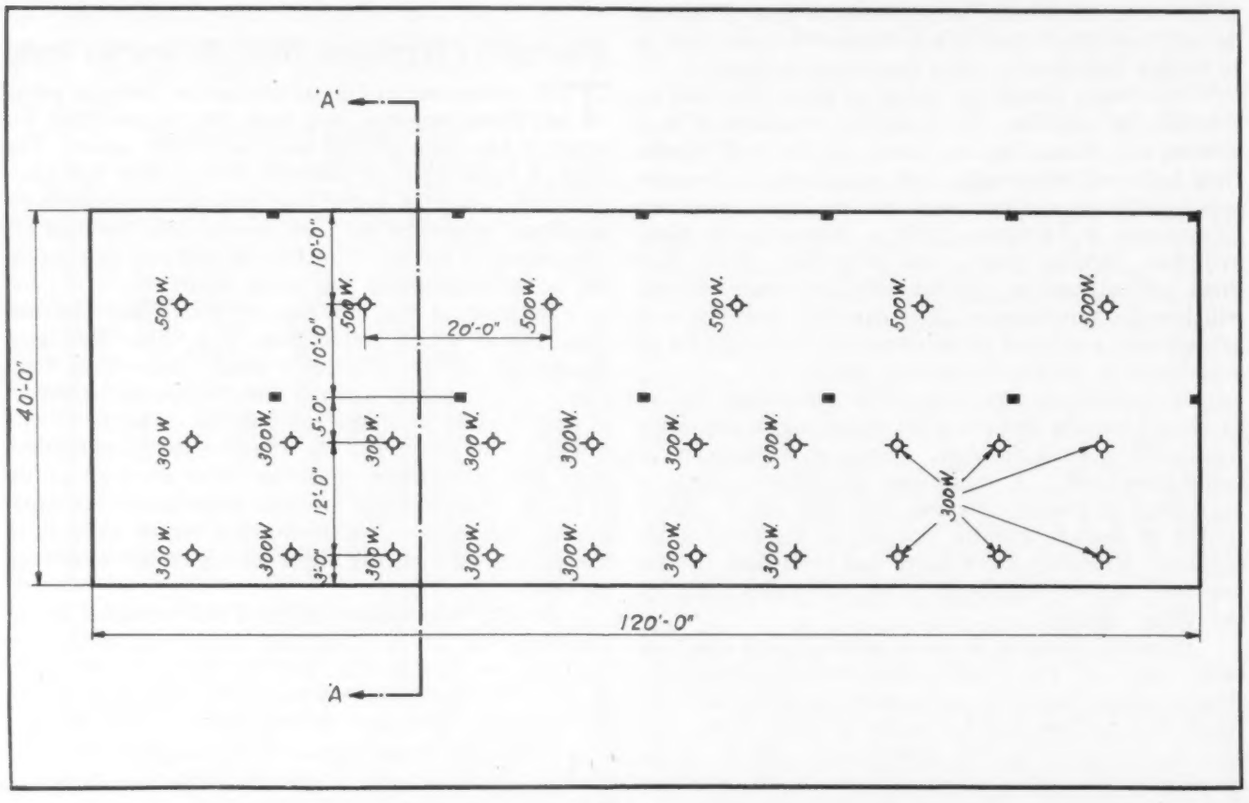


Fig. 1.

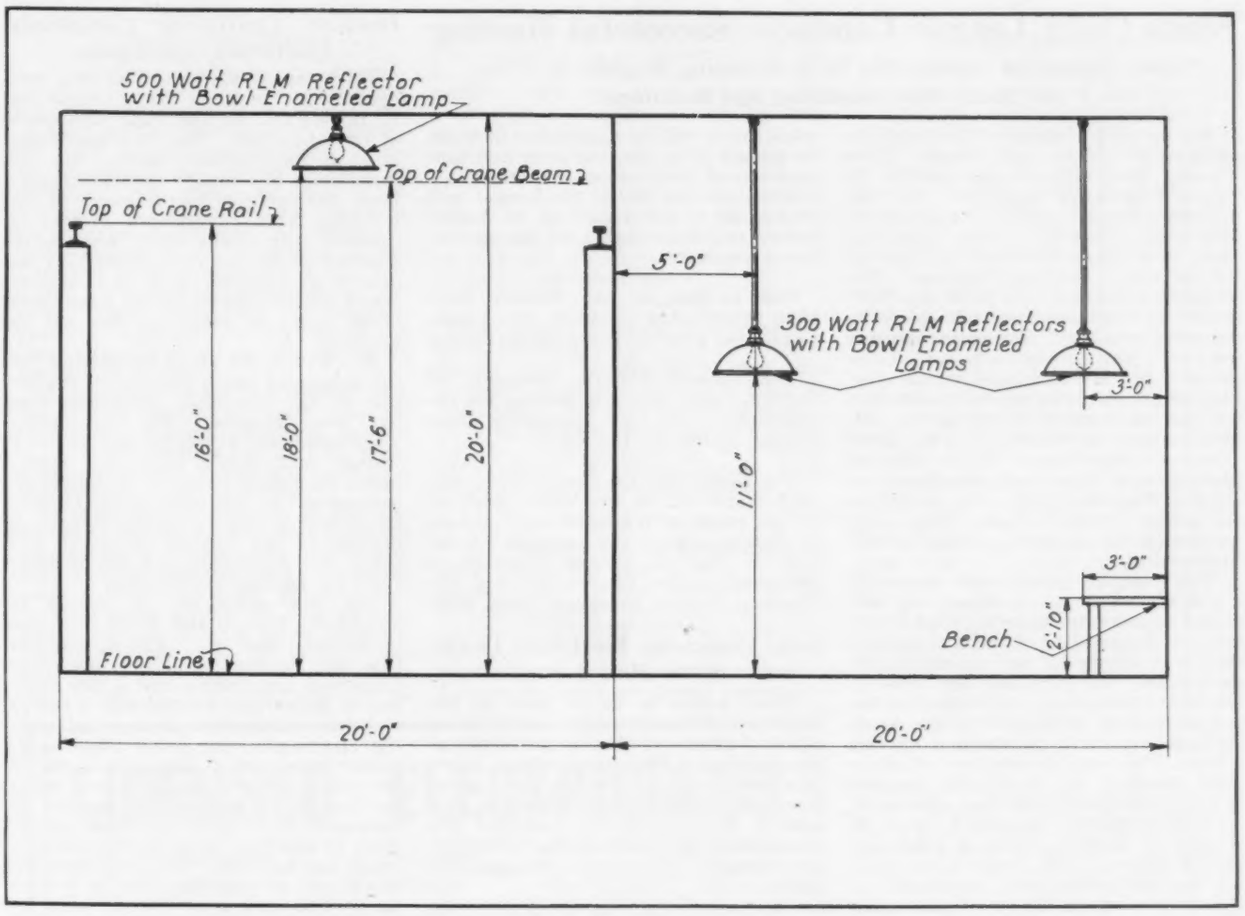


Fig. 2.

cerns. The increased safety factor, alone, has justified the additional investment in improved lighting and the increased production and decreased wastage, together with the possibility of efficient twenty-four hour operation, have paid big dividends.

The superintendent of the modern machine shop is usually cognizant of the effects of good natural and artificial illumination, but he has often been misinformed as to the proper artificial lighting system and as a consequence has not received the results desired. The installing of a local light unit over each machine and bench is far from desirable as the eyes of the workman looking up from his well illuminated work are not adapted for vision at low intensities; hence, if adjacent objects and aisles are only dimly lighted, he will be compelled either to grope about, losing time and risking accident, or to wait until his eyes have become adapted to the low intensity. Glancing back at his work again he loses time while the pupils of his eyes adjust themselves to the increased amount of light which reaches them. If long continued this condition leads to fatigue, as well as to interference with vision, and to accidents and decreased production.

The general illumination of all intermediate and surrounding areas should be sufficient to allow no marked contrast with the brightness of the working surfaces. It has therefore become universal to adopt the general or overhead system of lighting. This, however, means that consideration must be given to the interference of belts, pulleys and shafting, as well as traveling cranes.

In the case of a shop with group drive, the lights must be mounted below the drives so that no shadows are cast, and while this will sometimes mean the use of a number of smaller units spaced closer together, this is considered preferable practice by many engineers, even where there is no minimum limiting mounting height, in order to procure better distribution. This does not give quite as efficient a system from a dollars-and-cents cost per month viewpoint, as the lumens per watt vary from 11½ in the case of a 75-watt Mazda "C" lamp, to 19-3/10 for a 1,000-watt lamp. Where traveling cranes are operated it requires the placing of all R.L.M. units above the high point of crane beam or by angle reflectors on columns below the crane rail. Figs. 1 and 2 show a plan and section of a machine shop 40 ft. x 120 ft. with a 20-ft. ceiling and with a crane operating the full length of one-half of the section of the building.

The foot-candle intensity of illumination for a machine shop should in general be about ten, although in some sections a higher value should be calculated in order to provide for extra fine work.

It will be noted that one row of outlets is placed so as to properly illuminate the benches, the center of the lamp being on the same line as the outside edge of the benches.

On some machines, such as punches and presses, it is necessary to provide local illumination so that the die setter can do his work faster and better.

Three rows of convenience outlets to provide for portables to examine the interior of cored castings, etc., should be installed in accessible locations.

Santa Clara League Conducts Successful Meeting

Newly Organized Association Is Progressing Rapidly in Plans for Better Merchandising and Relations

The recently organized Electrical Development League of Santa Clara County has started aggressively to improve general conditions for the members and associates. Numerous active committees have been appointed, each functioning on some one feature of the retail electrical business. The program committee has been especially active and has arranged extremely interesting meetings. The recent meeting on Dec. 6 was an especially notable one for one hundred and three members of the industry, including representatives of jobbers, manufacturers' agents and dealers were in attendance at the Hotel Vendome, San Jose, Calif. Dealers were present from South San Francisco, Watsonville and Santa Cruz and from all points between those cities. The peninsular cities were especially well represented.

The meeting opened with dinner at eight o'clock in the evening and was called to order by chairman Fred Doerr, of the Garden City Electric Company, San Jose. Preceding and during the dinner, music was furnished by "Shorty" Meade's orchestra. Additional entertainment was furnished by the Annabelle Revue which presented a dancing sketch. This team is composed of young lady members of the Pacific Gas and Electric Company's San Jose office staff.

Brief addresses were made by A. E. Rowe, of Garnett Young & Company, San Francisco; J. W. Redpath, secretary of the California State Association of Electrical Contractors and Dealers, San Francisco, and by others who spoke on the value and strength of cooperative association and action. Mr. Doerr also gave an opportunity to all jobbers' sales managers who were present to express their views and each address was greeted with hearty applause. A one-act playlet was staged by "Jack" Hayden, of the Pacific States Electric Company, San Francisco, and M. H. Anderson, of the Pacific Gas and Electric Company, San Jose. The scene was a modern retail electrical store and the sketch depicted the possibilities of developing a minor repair job into a sale totaling in excess of $50.

Herbert A. Cram, representative in California, Utah and Nevada for the electrical department of Landers, Frary & Clark, New Britain, Conn., was the principal speaker of the evening and gave a very vivid picture of conditions confronting the electrical retailer. Mr. Cram pointed out the possibilities of developing retail sales and the danger of losing this potential business unless concerted action was taken to hold the trade to the electrical store. He also made many suggestions as to cooperative action by dealers and suggested that a public display of electrical merchandise be organized by the League in order to adequately present the desirability of appliances as Christmas gifts. This suggestion was enthusiastically received and a committee appointed to carry out the suggestion. This display will be held in one of the leading hotels and will be extensively advertised in the newspapers, all members of the League participating. The display will last only for three or five days and competent demonstration and sales forces will be maintained in order to explain fully the operation and convenience of the various devices.

The next meeting of the League will be devoted to the matter of all-electric homes and is in charge of the electric home committee.

Sam L. Hall, of the Electric Supplies Distributing Company, San Diego, Calif., was a recent Los Angeles visitor.

The Janssen Electric Company, of Eureka, Calif., has just finished the installation in the first all-electric home in that section of the state.

The Globe Electric Supply Company, 1622 Wazee St., is the latest addition to the ranks of manufacturers' agents in Denver, Colo. The manager of the firm is Paul A. Douden, formerly a salesman in the Denver office of the Western Electric Company since 1919.

San Francisco Electrical Dealer Uses Novel Mail Advertising

There seems to be no limit to the number of worth while advertising plans available to dealers in electrical merchandise. Everything from store windows and counters to the newspapers and mail service offers the possibility of reaching the customer and stimulating his desire to buy electrical merchandise for his own use and for gifts.

The postal card reproduced herewith shows a novel plan which was used by the Levy Electric Company, San Francisco, Calif. Not only is this card cleverly thought out and written but it also makes use of the psychological fact that most people will read it carefully because it comes properly addressed even though it may be headed with the name of another. The card makes use of past business relations assumed to have been had with the person to whom it is addressed and contains an appeal for the serious consideration of electrical appliances as gifts. This form of advertising also has the advantage of being certain of delivery to the addressee and of attracting the attention of the recipient to the sender.

Oakland Contractor Completely Electrifies Apartment

The complete electrification of a new apartment house is being made by P. H. Wetzel, an electrical contractor of Oakland, Calif. The new apartment is of an unpretentious nature, but the installation of complete electrical equipment was specified by the owner of the building. This progressive owner, in common with many other owners of apartments in the city, holds that an apartment supplied with the conveniences that electricity makes possible is much easier to rent than one not so equipped.

Mr. Wetzel did all of the wiring for the apartment and is responsible for the sale of the electrical equipment that has been installed. The installation when completed will be modern in every respect and should make the apartments exceedingly easy to take care of, because of the ease with which the electrical devices may be operated and also because of the absence of smoke and ashes that accompany the use of other fuels for heating and cooking.

The new apartment is located at Lakeshore Avenue and Hanover Street in Oakland and has eight apartments that will be rented. There are four four-room apartments and a like number of three-room apartments. Twenty-eight air heaters have been installed in the apartments, one being placed permanently in each of the main rooms of the suites. Provisions have been made for the use of portable air heaters in bathrooms and kitchens. Each apartment is equipped with its own electric range and hot water for all of the residents will be supplied from a central tank. This tank is of 300-gal. capacity and is equipped with a 5-kw. electric water heater.

Harvey Hubbell, Inc., Bridgeport, Conn., has brought out a new small composition attachment plug suitable for lamps, small portables and other similar devices. The plug has large binding screws and ample wiring space for lamp cord.

The John Hancock Electrical Company was awarded first prize for having the most artistic and attractive display window in the recent Edison Lamp Week contest held in Denver. This display was arranged by Mrs. H. A. Davis and Mrs. Clara Roles.

My Dear Jons:

I don't know whether it was you or Bill who asked me to find out where my wife purchased the Percolator Set, which she used at the party and which all the ladies admired

she tells me she got it at Levy's on Polk street near Sutter, and tho she has had it over three years it is still as good as new. She also says that if you'll phone Mr. Levy- Prospect 230, that she is sure he will pick out just the "Electrical Gift" that you may want. Hoping this is the information you want, I am "as Ever"

George.

The postcard used by the Levy Electric Company.

Telephone Directory Is Used by Licensed Electricians

Cooperative advertising in newspapers has been found to be an exceptionally effective means of presenting the message to the public at a proportionately low cost to individual advertisers. By grouping the advertisements of electrical contractors and dealers on one page, in many cases the electrical industry has been able to secure the entire space for the presenting of the electrical message, whereas if the individual contractors and dealers had inserted their advertising as separate pieces of copy, the results would not have attracted anything like the same amount of attention.

A new idea, though not entirely of a cooperative nature, has been tried out in Alameda County, California. Though the idea was not started as a cooperative venture, the results that have been attained are much the same.

In the classified directory of the telephone exchanges for Oakland, Berkeley and Alameda, in the section devoted to the electrical industry, there appears a page headed, "Licensed Electricians." On this page appear the names and addresses and in some cases short advertising phrases, of thirty electrical contractors operating in the three cities. Each space is ¾ in. deep and 2¼ in. wide, and in this space appears the name of the concern and other information according to the preference of the advertiser. The telephone number appears in bold face type, making this more legible than the rest of the copy in the card.

This page, appearing as it does in the classified section of the telephone book, has been found to be quite an efficient means of advertising. The advertisers are grouped in alphabetical order and as a result no undue prominence is given to any concern.

The Rocky Mountain Electrical Cooperative League Electrical Home committee has recommended that the League put on an all-electric home in May, 1924. The committee is composed of **E. H. Eardley**, chairman; **L. B. Johnson, E. A. Evans** and **G. R. Randall.** This will be the third electric home under the auspices of the League.

The Western Insulex Company, Oakland, Calif., has moved to a new and much larger factory at 360 Adeline Street, Oakland. The need for larger production facilities resulted in the purchase of a lot and the construction of its own plant. The company makes the Insulex brand of insulating material.

LICENSED ELECTRICIANS

ADVANCE ELECTRIC CO.
E. C. Hiester
12th and Webster Sts.
Phone: Oakland 3994

JAMES ANDERSON
House Wiring, Fixtures and Repairing
2531 Wakefield Ave.
Phone: Fruitvale 485-W

BLUNDON & WRIGHT
Electric Power Installation and Service
Agents for Fairbanks-Morse Motors
Lighting and Pumping Plants
Motors Rented, Repaired and Rewound
All Classes of Wiring
20th St. and Telegraph Ave. Oakland 6214

BUSHMAN ELECTRIC CO.
Wiring, Fixtures, Appliances
Thoroughly Experienced and Reliable Workmen. All Work Guaranteed
No Trouble to Give Estimates
Low Rent-Low Prices 2331 San Pablo Ave.
Phone: Lakeside 3498

CALIFORNIA ELECTRICAL CONSTRUCTION CO.
275 12th St.
Westinghouse Motors
Phone: Oakland 9417
San Francisco Oakland

COMMERCIAL ELECTRIC COMPANY
Electric Work of All Kinds
A. E. Jund
496 21st St.
Phones: Oakland 3421
Residence, Alameda 2902-R

CONRAD ELECTRIC CO.
R. H. Conrad, Motor Expert
Motors—We Buy, Sell, Rent, Repair, Install and Exchange
2530 San Pablo Ave.
Day Call Phone Shop, Lakeside 138
Night Call Phone Oakland 6572

CO-OPERATIVE ELECTRICAL CO.
L. M. Antley J. J. McCourt
High Grade Lighting Fixtures
Electrical Construction
Office and Salesrooms, 640 12th St.
Phone: Oakland 339

ELECTRICAL EQUIPMENT AND REPAIR CO.
Fred W. Fischer, Prop.
1238 1st Ave.
Wiring, Fixtures, Supplies and Repairs
Phone: Oakland 3311

ELECTRIC MOTOR & MACHINE WORKS
Specialists in the Repairing and Rewinding of Electric Motors, Generators and Control Apparatus
Motors Rented 257 Broadway
Office Phone: Oakland 2304
Night Calls, Oakland 6280, Merritt 6827

FRUITVALE ELECTRIC CO.
Fixtures
Wiring, Old and New Houses
Appliances—Repairs
3271 East 14th St.
Phone: Fruitvale 39

R. H. GREEN
Electrical Contractor
Established 1903
452 Lincoln Ave., Alameda, Calif
Phone: Alameda 2275

HARTMAN ELECTRIC CO.
C. L. Hartman, Prop.
Wiring, Fixtures, Supplies
Old House Wiring a Specialty
4731 East 14th St.
Phone: Fruitvale 3817

N. C. HOPKINS
Wiring and Fixtures
1451 23rd Ave.
Phone: Fruitvale 843

MELROSE ELECTRICAL SHOP
Electric Wiring, Supplies and Fixtures
4264 East 14th St.
Phone: Fruitvale 3468

MILLER ELECTRIC CO.
C. W. Miller, Manager
Electrical Construction
Lighting Fixtures
2538 Crist St., Alameda, Calif.
Phone: Alameda 2941

MONARCH ELECTRIC MOTOR CO., Inc.
Motors and Transformers Installed, Repaired and Rewound
2291 East 12th St.
Phone: Fruitvale 4433

F. E. NEWBERY ELECTRIC CO.
Contracting Engineers
Motors Repaired, Rented and Rewound
412 Webster St.
Wiring—Repairing
Phone: Oakland 2242

G. E. ORTMAN ELECTRIC COMPANY
Motors Installed and Estimates Furnished on House Wiring
972 10th St.
Phone: Lakeside 3946

PACIFIC ELECTRIC MOTOR CO.
Motors Bought and Sold
Motors Rented and Repaired
Motors Installed
Day Phone: Lakeside 1282
Night Phone: Piedmont 3012W
12th Street at Alice

PARAMOUNT ELECTRIC COMPANY
Al Connolly Al. Weber
"Everything Electrical"
Lighting Fixtures, Electrical Construction, Repair Work
462 43rd St. Phone: Piedmont 236

QUALITY ELECTRIC MOTOR COMPANY
Motors Rented, Rewound, Sold and Exchanged
Located at 297 12th St.
Phone: Oakland 1422
Night Phone: Lakeside 4948

SCOTT-BUTTNER ELECTRIC CO.
Electrical Contractors and Dealers
Wiring, Fixtures, Repairs, Appliances, Radio and Electric Supplies
15 Grand Ave. (22nd St. at Broadway)
Phone: Lakeside 93

SPENCER ELECTRIC CO.
When You Invest Employ the Best
Wiring, Fixtures, Repairing, Radio, Appliances, Supplies
338 12th St.
Phone: Oakland 492

H. STROLL
Electric Contracting of All Kinds
Old House Wiring a Specialty
Prompt Service Assured
If You Need Work in Our Line Get Our Prices All Work Guaranteed
692 Madison St. Phone: Lakeside 6233

STROM ELECTRICAL CO.
Appliances, Motors, Radio Supplies
Contracting and Materials
"Let's Try Alameda First"
1350 Park St., Alameda, Calif.
Phones: Store, Alameda 811
Personal Service Residence, Alameda 346

G. WEBBER
Wiring, Fixtures, Motors
1705 Seminary Ave.
Phone: Elmhurst 212

P. H. WETZEL
Electrical Contractor
Electrical Fixtures, Estimates Given
642 Hopkins St.
Phones: Fruitvale 4546 or 8005-W

HOXIE & MEECH
Manufacturers of Distinctive Lighting Fixtures
Sales Room, 4526 E. 14th
Fruitvale 4126
Night Phone: Fruitvale 9256
Factory: Fruitvale 2267

GOSS ELECTRIC Company
1228 23rd Ave.
Oakland, Calif.
Wiring and Fixtures
Westinghouse Lamps
Phone: Fruitvale 1892

Electrical contractors of Oakland, Alameda and Berkeley use this means of reaching telephone subscribers. The page reproduced above appears in the classified section of the telephone directory.

New Officers Named by Alameda County Association

Officers for the coming year were elected at a meeting of the Electrical Contractors' and Dealers' Association of Alameda County, held in the Builders' Exchange Building in Oakland, Calif., on Dec. 4. T. L. Rosenberg, of the Quality Electric Motor Company, was re-elected president of the organization and C. D. Bronson, of the California Electrical Construction Company, was elected vice-president. F. A. Andrews, of the Andrews Electric Company, was named treasurer of the Association.

At the same meeting a new executive committee was also elected. The new members of the committee are: Walter Spencer, Spencer Electric Company; E. C. Heister, Advance Electric Company; and W. D. Vance, of the Pacific Electric Motor Company.

The association which was founded about June 1, 1923, has been steadily gaining in membership and importance in the East Bay region. At the present time there is a membership of about fifty-five. Attendance at the meetings has been exceedingly satisfactory and the results, according to members of the association, have exceeded the first expectations. A considerable amount of time has been spent in the fostering of satisfactory relations with the Department of Electricity in Oakland and as a result closer cooperation has resulted.

Meetings of the association are held each Tuesday evening at 8 o'clock in the Builders' Exchange Building. Informal procedure has been adopted in order that the members may become better acquainted with each other and also with the idea that the informal meeting is more adaptable to open discussion of mutual problems. Speakers from outside of the association have been present at several of the meetings to address the members.

Electrical Men of Oakland Hear Address of W. L. Goodwin

About twenty electrical contractor-dealers and thirty men representing other branches of the electrical industry in Oakland, Calif., were in attendance at the meeting of the Oakland Electric Club at which W. L. Goodwin, operating vice-president of the Society for Electrical Development, Inc., was the principal speaker. Mr. Goodwin discussed the relation of contractor-dealers of the West to those of other sections of the country and advocated that the men become more interested in national affairs of the industry.

The plans of the Society for Electrical Development, Inc., were explained to the members of the club and the service that the organization gave to the industry was also told. He recommended the use of electrical pages in local newspapers on a weekly basis and suggested that the editorial matter on these pages could be secured from the society's news bureau.

S. H. Taylor, secretary of the Pacific Coast Electrical Association and newly appointed Pacific Coast representative of the Society for Electrical Development, Inc., was also a speaker at the meeting. Walter Hayden, of the Fobes Supply Company, Oakland, introduced the speakers.

JOBBER, DEALER AND SALES AGENT

"Better Lighting Week" Campaign Successful

Electrical Contractors and Dealers Association of Sacramento Inaugurates Move for Improvement in Lighting

Realizing the importance to the community of better lighting and its effect on the general public health and welfare, the Electrical Contractors and Dealers' Association of Sacramento devoted the week of Nov. 5 to a campaign for improved illumination of homes, stores, offices and industrial plants. The committee in charge designated the movement as "Better Lighting Week" and all members of the association participated in cooperative effort.

Meetings were arranged at which special speakers, chosen for the occasion and trained in the subject of lighting, gave interesting talks on the various phases of illumination, each address being shaped to the particular audience before which it was presented. The Pacific Gas and Electric Company and the Great Western Power Company, both of which companies serve the city of Sacramento, cooperated in the campaign and assisted materially in its success.

The members of the association advertised cooperatively in the newspapers and all advertising carried the symbol of the association—"Electrical Dependability." W. H. Rademacher, of the Harrison, N. J., factory of the Edison Lamp Works of the General Electric Company was the principal speaker during the campaign and made several addresses before various educational and civic bodies. Among others he addressed the Sacramento High School, Junior College, Sacramento Ad Club, Woodland Lions' Club, the Electrical Contractors and Dealers' Association of Sacramento and an open meeting held in the Chamber of Commerce auditorium. He also spoke before the Sacramento Valley Electrical Society at its meeting in the Hotel Land on Nov. 14 and the Sacramento Exchange Club on Nov. 16. At these meetings were present a great many representatives from all of the various branches of retail trade and manufacturing and the idea of better lighting was communicated to all.

Speaking before the Electrical Contractors and Dealers Association of Sacramento Mr. Rademacher said, in part:

"The light manufacturers, the public utilities, the various associations, etc., have spent a great deal of money in national advertising, displays, and campaigns to sell the idea of good illumination and to create a 'lighting consciousness.'

"Not nearly as much business has been secured as should have been; one reason for this is the fact that the contractors and dealers have not been alert. Only about three out of every ten stores have good illumination, and only about ten out of every one hundred industrial plants.

"The difficulty with the contractors and dealers has been that they are skeptical of the possibilities of selling good lighting, and wait for the customer to come to them; they are not sold on the idea of the benefits to be derived from proper illumination and do not conscientiously sell it. Another reason for this is the fact that where one contractor has a distinct 'lighting conscience' and sells a good job, the owner goes to another contractor for another bid, and this man substitutes a cheaper job at a lower bid, and so on, until in the end the consumer is not satisfied and the contractor hasn't a job that can be used as an example of proper illumination.

"One good job sells another, and all of us should work together to build up a uniform standard installation. Good lighting does not cost much more than poor lighting; and good lighting is not hard to sell. The contractors and dealers should let the public know they have good lighting to sell."

By means of a chart, Mr. Rademacher showed the relative potential influence of electrical retail trade on the consumer due to the frequency of contact, ranging in order of importance from a minimum to a maximum as fixture dealer, contractor, dealer, and central station—all helping to create a "lighting consciousness."

"The educational work being carried on by the manufacturers is not entirely selfish, for they are endeavoring to build up all the branches of the electrical industry. Poor dealer installations in their own windows are a drawback; they must sell themselves. Much good has been done by the promotion of the electric home idea and it should be fostered at all times, as it is a gain for everyone. Good-will is created by a good job. Seven ways to build up illumination business are: newspaper advertising, demonstration rooms, personal calls, your own lighting, special window displays, stuffers, and civic weeks.

"The old carbon lamp used four watts to produce one candlepower of light, while with the modern type B Mazda

The window of the J. C. Hobrecht Company, Sacramento, Calif., was loaned to merchants in other lines of business during the "Better Lighting Week" campaign of the Electrical Contractors and Dealers Association in order to demonstrate the value of adequate window lighting and the increased display possibilities obtained from the use of color screens in show window illumination.

only one watt is used and with the type C only one-half watt is required. Lighting costs have been decreasing until today they are only 5 per cent of what they were in 1890. This fact is due to a large extent to the improvement in the efficiency of the incandescent lamp.

"Artificial light is needed in order to display merchandise in the average interior; and good illumination allows a better display. Benefits to be derived from good illumination are: the amount of goods returned is greatly lessened; the clerical force is more enthusiastic and alert; the buyer is more receptive. The well lighted store draws people to it.

"Production tests have been conducted and the results have shown that proper illumination actually does speed up production and on specific tests this amounted to from six to thirty per cent increase in output with an increased cost of only one to one and one-half per cent of the cost of wages; with an average figure of ten per cent increase in production with an increased cost of only one per cent.

"Glare is the commonest evil met with in illumination problems. When glare exists there is not too much light, but it is mis-applied. What is needed is a comparatively uniform distribution of high intensity without glare. The purpose of a reflector or fixture is to control the light rays and to minimize the effect of glare.

"Reflectors are divided into three general types: direct, semi-indirect, and totally indirect. Bowl enamel lamps should be used with open mouth reflectors when they are hung relatively high.

"Eighty per cent of the time the customer doesn't know just what he needs to satisfy the requirements and it is the dealer's business to show him what will be best. The two things to consider are quality and quantity of light desired; if this is not done, mediocre lighting will probably result instead of good lighting.

"Many improvements have been made in lighting equipment. The right reflectors should be used with the right lamp in order to secure the best results. Many mis-applications have been made by increasing wattage of the lamps without any change in reflectors, which can only produce poor results.

"The contractors and dealers should strive to sell satisfaction and service. It is necessary to use proper finishes in order to secure harmony. Tell people how to properly care for an installation, with particular stress on keeping lamps and reflectors clean.

"In show window lighting, something distinctive is necessary to attract attention. Show windows represent a large investment and therefore should be used as much of the time as possible. The advertising value is greatly enhanced by higher intensities; and also the drawing power is increased. By using angular reflectors, it is possible to control the light and keep it over the display area, producing a higher intensity on the goods; the use of daylight Mazda lamps also helps. Colored illumination presents a different appearance and has greater drawing power; on the average 40 per cent more people will be stopped. Colored illumination can now be easily obtained by the use of gelatin filters.

"Footlighting is another phase of show window lighting. It should usually be used in combination with the other forms. Show window lighting can be summed up by considering the show window as a miniature stage, where spotlights, foot lights, etc., can all be used to advantage. As to the proper light intensities, charts have been prepared by different manufacturers and organizations that give suggested intensities for different purposes; however, too much light cannot be obtained.

"There is a great deal of work yet to be done and just where the economic limit will be reached is very indefinite."

Merchants and manufacturers who were present at the various meetings showed great interest in the matter of better lighting and a considerable amount of business is expected to accrue as a result of the campaign.

ELECTRICAL INSTALLATION
GEO. C. FOSS
Mr. Merchant!
get acquainted with the efficient salesman.
Better Lighting
He will help reduce your overhead expense and brighten up your store.
We are agents for the Standard Solar Day-Lite Commercial Units, which are made up of two layers of cased crystal and translucent white glass with a high polished surface, thereby ensuring a right light with practically no loss.
Information and Estimates Cheerfully Given
Make your hours of real hours of cheerfulness, by lighting up that dingy living room and dining room.
We stock Fixtures, candlesticks and a number of special and unique designs.
Look for the Electrical Dependability seal on all your electrical work and be assured of better work.
BETTER LIGHTING BETTER BUSINESS
Dollars are mostly irresistibly drawn to the well lighted store
WE ARE
Electrical Contractors
WITH KNOWLEDGE AND EXPERIENCE
For Home, Business or Public Buildings
Let Us Figure the Electrical Construction
Sterling Electric Company
907 9TH MAIN 708
ELECTRICAL SUPPLY CO
1814-816 J St Main 427
C. F. SORENSEN, Mgr.
ELECTRICAL DEPENDABILITY
"The Mark of a Service Electrically"
By having your work installed by a firm displaying the "Electrical Dependability" trademark, you can depend upon its giving you in the way of operation and performance duties that which you have anticipated and hoped for.
Electrical goods bought from Electrical Stores are backed by expert Electrical Service.
Electrical Contractors
—and—
Dealers Association
OF SACRAMENTO
Ninth Street Phone Main 918
Mech. & Elec. Eng. Co., 1110 J St., Main 575.
Electric Service Co., 2941 35th St., Capital 41.
Electric Supply Co., 814 J St., Main 427.
Foss, 921 Colonial Bldg., Main 42057.
Electric Works, 2314 10th St., Main 1142.
Johnson Co., E st 11th St., Main 694.
Mgr. Co., 807 Exposition St., Main 19.
THOMAS DAY COMPANY
LIGHTING FIXTURES
SACRAMENTO, CAL.
MAIN 6400
Mr. Merchant
Listen!!
Do You Know What Your
SHOW WINDOWS AR
WORTH?
All of this week we have a most striking Display in our Windows showing WHAT CAN BE DONE to DISPLAY Merchandise BY LIGHT.
It will amply repay every merchant in Sacramento to make a special trip some evening to look it over.
Showing will remain in our windows until Nov. 11th
HOBRECHTS
California Mechanical and Electrical Engineering Co.
1110 J Street Main 575
We buy good materials
We employ trained men
We ask reasonable prices
We Give Free Consultation and Estimates
LET US FIGURE ON BETTER LIGHTING FOR YOUR HOME AND BUSINESS
ELECTRICAL DEPENDABILITY
DANCE UNDER BRILLIANT LIGHT
furnished by one of our electric fixtures. You will find them in all of the same type, have a fixture that will blend harmoniously with the other fixtures of the room. You will find what you need among our display.
When you figure on new homes, stores, or buildings of any kind we will be glad to help you. We are good at electrical construction, engineering.
Electric Service Co.
2941 35th Cap. 41
Why are We Selling So Many Fixtures?
Because
we have the latest designs and finishes. Every selection sold as a salesman in itself on account of our ability to tie up with the interior decorations, which is necessary to give complete satisfaction.
You Are Invited To See Our Show Rooms
Clifford Prudhomme
Phone Cap. 1177
3032 Sd. Ave. Curtis Oaks
FIXTURES
We Specialize in Better Lighting
We stock and make Electrical Fixtures
If your home or business needs are entirely new we will plan and install them.
Consult us about your electrical construction needs.
Waxon Bros.
1014 J Street Main 241
ELECTRICAL DEPENDABILITY

Samples of the cooperative advertising of the members of the Electrical Contractors and Dealers Association of Sacramento during their "Better Lighting Week" campaign. The entire week was devoted to the promotion of additional and better lighting of homes, stores, schools and factories and the symbol of "Electrical Dependability" was used as the keynote of the campaign.

Partial view of the interior of the Cole-Clark Electric Company on the day that the store was first opened for business.

"Mr. Customer, My New Store Is at Your Service"

Well Advertised Opening Aids in Introducing New Establishment to Firm's Prospective Customers in Vicinity

Probably the two most important days in the business career of the electrical contractor-dealer are the day that he decides to enter the industry and the day on which he opens his establishment for the first time. The disregarding of the importance of either one of these two days has spelled failure for many concerns and the granting of proper consideration to them has, on the other hand, started many contractors on the high road to success.

In making the decision to enter the electrical industry the man on the outside places himself ready, not only to compete with men already established in the electrical business, but also puts himself in a position where he must be prepared to serve his customers with the same diligence that his competitors do if he is to keep up the standards of the industry. The opportunities for personal gain are undoubtedly the factors that have influenced the individual to enter business for himself, but he has at the same time accepted certain responsibilities which will result in his doing business at a loss unless he can do a sufficient volume at a reasonable cost.

The plan of organization of his concern, the financing, the terms upon which he will do business, the lines that he will carry, the location in which he will do business and other similar problems must all be solved before an attempt is made to make any definite steps in starting business. Following the making of decisions as to the principles that will cover the method of doing business, the prospective contractor-dealer starts in on the actual work of putting these principles into service.

After deciding where his establishment is to be located, he has another problem of deciding when is the most advantageous time to officially open the store for business. When this time has been decided upon, preparations must be made for introducing himself and his new concern to the public.

The opening day of any establishment is, according to many successful managers of merchandising concerns, the most important in its history. The reason for this is that on this day the new concern makes its presence known to the community that it is to serve and unless it is properly introduced a considerable amount of time will be spent in notifying the public of the existence of the new store that has been located in the vicinity.

To the public that attends the opening of the new concern, the celebration is put on in order to attract attention to the establishment and to introduce it to its new customers. The owner and manager of the new place of business know that there is a twofold purpose behind the opening ceremonies. The manager of the new store knows that in addition to introducing his establishment he is creating good-will for himself and his store and it is for this reason that such pains are usually taken with preparations for the opening day.

The merchandiser who has been established in a location for some time, of course has the advantage over the new entrant into the field. The former is known to his trade and unless relations between the store and the customers have been unsatisfactory it will be difficult for a new concern to take the business from the older one. This will be found to be true even if the new establishment is handier to the customer. Thus it will be seen that the initial impression that the electrical contractor-dealer makes upon his prospective customers is of utmost importance.

A well decorated store, in which a capable sales force is ready to show the visitors around and answer questions, will do much toward influencing prospects to visit the store when next in need of articles stocked by that firm. The manner in which the merchandise is displayed will have an important part to play in the opening day visiting period. The eye is impressed much more by the sight of the article than it is by written words that may be presented at a later date. It is distinctly to the advantage of the merchandiser to present all of his wares in the most appropriate settings during the opening day in order that visitors may see for themselves what line and character of stock is carried in the new store.

Though the opening of the new concern in the smaller community may be less pretentious than in the larger city, the need for some sort of special event is present. The same rules will govern in the two places for it is equally as important that the new concern become recognized and that a certain amount of good-will be formed in each location. Preparations for the opening should be made with just as much care by the owner of the small concern in the small city as by the manager of the larger establishment in the bigger field. The difficulties of entering the business, though not the same, will be of equal weight.

Some time ago a new electrical concern was established in Corvallis, Ore., by Frank Cole and G. A. Clark. These men made all preparations for the opening of the store and then proceeded to advertise the day of the opening. The newspaper advertising that was done in Corvallis attracted considerable attention to the store and a large crowd visited the establishment on the first day that it was open to the public. The two owners were on hand to greet the visitors and to show them around the store. All questions concerning the new industry that they had entered were answered freely but on the opening day no attempt was made to make sales to the visitors. The idea was rather to introduce the store to the visitors and to create as much good-will as was possible in the short time that the public of Corvallis spent in the store.

The interior of the store was attractively decorated with cut and potted flowers and electrical merchandise was presented in display cases and on the shelves that lined the walls. Devices on display were isolated and not bunched in order that visitors might gain an idea of the individual items that were carried by the Cole-Clark Electric Company. In a small room to the rear of the main sales room a display of fixtures was presented. Both ceiling and wall fixtures were presented there and guests were invited to view that display also.

The opening day held by the Cole-Clark Electric Company proved to be an excellent means of introducing the company to the citizens of Corvallis and of establishing the company's name in the minds of the public. The opening celebration, used by the Corvallis company, is suitable not only to firms that are starting in business for the first time but also for those that have moved to new buildings and desire to inform their customers of their present locations.

Booth of the Eureka Vacuum Cleaner Company at the Interstate Fair held in Spokane, Wash., this fall. Six thousand people entered the guessing contest which was held during the week.

Names of Five Thousand Prospects Secured at Fair

Eureka Vacuum Cleaner Company Uses Illustrated Placards and Guessing Contest to Arouse Interest in Display

The prize guessing contest has not been "worked to death" as a means of attracting attention, according to R. B. Carter, Northwest district manager for the Eureka Vacuum Cleaner Company. Neither has the display booth at the local fair, provided that the booth is attractively decorated for the occasion.

During the Interstate Fair held at Spokane, Wash., this fall, Mr. Carter had an occasion to make use of the guessing contest idea and at that time found it to be a most successful means of securing interest in the display that he had to present and also a means of securing names of prospects. Three Eureka vacuum cleaners were given away as prizes.

The guessing contest was centered around a 9 x 12-ft. rug that was placed in front of the booth used by the Eureka company. The crowds that attended the fair were permitted to walk over this rug and at the end of each day the rug was cleaned with an Eureka vacuum cleaner. The dirt was saved and the persons who entered the contest guessed the weight of dirt that would be collected during the week that the fair was open.

Six thousand persons were interested to such an extent that they signed guess cards and the guesses that were recorded varied from 2 oz. to 600,000 lb. At the end of the contest the dirt was weighed before witnesses and the accumulation that had been collected by the cleaner amounted to 36 lb. 14 oz. The three winning guessers were within 2 oz. of the correct figure and eight persons missed the total by only 4 oz.

After the contest was completed an analysis was made of the list that had been secured during the week. It was found that out of the 6,000 persons who signed the cards, 1,102 already owned vacuum cleaners. The remaining 4,898 persons were judged to be good prospects for the company that retailed the vacuum cleaners.

During the time that the fair was open to the public, the booth of the Eureka Vacuum Cleaner Company was attractively decorated and an attendant was on hand to answer questions of visitors. A set of verses, appearing at the top of the booth, was no doubt responsible for much of the attention that was directed toward the display. This group of sayings, which was illustrated, was headed with the phrase, "The Eureka Speaks for Itself."

SANTA CLAUS BROADCASTS A MERRY XMAS MESSAGE

By JOE OSIER

—"And peace on earth to gentle men. * * *"

Station I.O.U.—S. Claus broadcasting to men of the electrical industry:

"Men of the electrical fraternity:—The happy yuletide is at hand and soon I shall pack my storage battery truck with suitable gifts for the high and low bidders, leaving my Northland home on my annual tour. But, before I make my departure—before the Christmas bells begin to chime, I wish to give every Man of the Trade due warning regarding what he may expect in his seamless sock on the season's brightest day.

"My generosity, my friends, will depend upon how you have conducted your affairs—business and personal—during the past twelve months.

"You who have been fathers to your families, the Good Chief to your employees, a Good Fellow to your associates and a friend to all men, will be showered with gifts as never before.

"But, by the same token, you who have been classed as crabs—both at home and abroad; you who have double-dealt and connived and contrived to grease the skids for a competitor,—your presents shall include checks marked N. S. F., notes overdue, foreclosures, liens and bills without end.

"On this Christmas day, I shall exchange good for good and evil for evil—I shall reward the square-shooter and the slippery slasher. To one, I shall give all that is good; to the other, I shall dedicate a roundelay of razzberries.

"I shall look with compassion on 'the other bidders were' but shall turn my paunch in disdain from the witless ones who whittled, slashed, cut and crawled under legitimate bidders. My thumbs shall be down on all these.

"I shall bear gifts bespeaking my good will to men who are cheery, obliging and gracious; I shall extend my hand in fellowship to those who played square and stood square.

"But for those of corkscrew attributes, who skulked and slept in round-

As youse sew—so sets your sock!

houses, I shall say them 'nay' and 'nix' and 'nothin' doin'.'

"Gentlemen, this is Santa Claus speaking—K. Kringle with the red 'unie' and the button nose.

"I am justice personified; I am fairness, unequaled, but I am gifted with a marvelous memory. I have kept tab during the year and I have the goods on every man, woman and child in the world.

"And on Christmas Eve, I shall honk thence and thither and yon and satisfy the yen and the yearnings of those who have believed in me; believed in their fellow men and played the game of Life and won fairly.

"I now turn to the task of manufacturing a million asbestos mitts for men of the industry who have burned their fingers during the year, on contracts they should not have wanted.

"A Merry Christmas. I thank you."

INDUSTRIAL NEWS

New Interconnection to Be Made in Southern California

The last link in the interconnecting power line chain, extending between Oregon and the Mexican border and covering the entire state of California in an unadvertised "superpower" system, was forged when arrangements between the San Diego Consolidated Gas & Electric Company and the Southern Sierras Power Company were completed for a line connecting those two systems over the Coast range and through the desert between San Diego and Imperial Counties.

An expenditure of $500,000, of which the San Diego company will spend $200,000, is to be made for a connecting power line which will make it possible for power to be purchased from the San Diego company for use in Imperial Valley in case of emergency.

The extension improvement follows the purchase of the Holton Power system by the Southern Sierras Power Company. The new line will connect the former Holton Power Company lines with the San Diego Consolidated Gas & Electric Company for emergency service. In the past, with power sources in the north, storms in the San Bernardino mountains have sometimes broken down lines feeding Imperial Valley, leaving it dark until repairs could be made. The new line to San Diego will make power available from this source in case of such emergency.

According to the agreement between the two companies the San Diego Consolidated Gas & Electric Company will extend its lines from its new substation at Escondido to Rincon, where it will connect with the line built by it to supply power to the Henshaw dam operations. The line from Rincon to the Henshaw dam will be purchased by the Southern Sierras Power Company, it is understood, and will be extended by that company through one of the passes in the Coast range to and across the Imperial Valley desert to connect with the former Holton Power Company lines at El Centro.

Survey parties from both companies have been plotting out the routes to be taken for some months and work on the construction of the line is expected to start with the California State Railroad Commission's approval of the transaction. Announcement of the transaction first came from A. B. West, president of the Southern Sierras Power Company, on Thanksgiving day, although negotiations for the connecting line have been under way for several years.

The Holton Power Company was originally organized to provide light and power to Imperial Valley by the use of steam generating plants. The steam plants becoming antiquated, power has been purchased for some years from the Southern Sierras Power Company over a transmission line 500 miles in length. The new line to San Diego will be 100 miles in length and bring much closer connection to power sources. The industrial welfare relations of San Diego and Imperial Valley are also expected to become closer welded by this new power connection.

As the first step in this project, the power line built by the San Diego company to supply energy to Henshaw dam was made of permanent type construction and for later conversion from an 11-kv. to an 88-kv. line. The new power line being built by the San Diego Consolidated Gas & Electric Company between Del Mar and Escondido, and the new substation erected at Escondido were also built with provision for sufficient capacity to take care of the Imperial Valley tie-line in the event of its final undertaking by both companies.

Bellingham Refuses Sanction of Municipal Plant Bonds

At the Bellingham, Wash., city election, Dec. 1, the proposed $500,000 bond issue to provide a municipal light and power plant, was defeated by the voters. Prior to the election, strenuous objection to the measure was voiced by various public bodies, including the American Association of Engineers, who held that no proper and complete estimate of the cost of the project had been obtained, and that information available was inadequate to justify action.

The Bellingham Central Labor Council also passed a resolution opposing the proposed ordinance, on the ground that details of the project were incomplete. This body, however, urged a readjustment of the rates for electric power and lights now being charged by the Puget Sound Power & Light Company, which serves the city.

To supplement two previous applications for power sites in Tulare County, California, Loren B. Curtis, of Los Angeles, has made an application to the Department of Public Works of the State of California for permission to appropriate 150 sec.-ft. of water from the Kern River. The plan is to erect a power house in Tulare County. The theoretical horsepower that can be developed is 27,270.

Specifications and conditions of contract covering the power house and plant equipment for the Arapuni Electric-Power Supply of the Public Works Department of New Zealand have been printed. A copy of the book is on file in the office of the Journal of Electricity.

Arizona to Refuse Extension of Diamond Creek Permit

That the Girand permit from the State of Arizona, for the erection of an hydroelectric project at the mouth of Diamond Creek on the Colorado River, will not be renewed when it expires Dec. 23, is the announced decision of Governor Hunt of Arizona. The governor's decision came after the matter was referred to him by Vernon Vaughn, water commissioner of Arizona.

Governor Hunt wrote the water commission requesting the denial of an application for a renewal of the permit, which has been filed by J. B. Girand, the original holder of the Diamond Creek permit. The letter sent by the governor reads as follows:

"As the question of the development of the Colorado River is one which is now receiving consideration both by the states in the basin and by the Federal government and the desire seems to be to treat the proposition for development as a unit, I believe it advisable that the negotiations be not affected in any way by the interests of any one project. The Federal Power Commission has indicated that it will not grant any permit to Mr. Girand until such time as the seven states of the basin arrive at an understanding."

The Federal Power Commission recently refused to grant a license to Mr. Girand for the project, stating that the settlement of the Colorado River controversy would have to be made before any license for projects on the river could be made. The Girand permit was issued on Dec. 26, 1922, and was one of the last acts of the former Arizona state power commission.

The permit stated that the applicant was to build a dam at the mouth of Diamond Creek, 300 ft. in height and 1,200 ft. long. The permit allowed the appropriation of 10,000 sec.-ft. of water for use in the generating of power. This permit was assigned to the Colorado River Engineering & Development Company on Dec. 27, 1922. About $150,000 is understood to have been spent in preliminary surveys and soundings.

R. E. Cunningham, superintendent of distribution, Southern California Edison Company, was the main speaker at the Dec. 11 meeting of the Synchronous Club, held in the banquet room of the Independent Foresters' Building in Los Angeles, Calif. Mr. Cunningham's topic was "Recent Observations of Engineering Practice Throughout the Eastern States."

The Pacific Gas and Electric Company has recently requested the approval of the California State Railroad Commission in connection with the company's proposal to operate the plants and properties of the Amador Electric Light & Power Company of Sutter Creek, Calif.

Advocates of Public Ownership in Washington Active

At a meeting of public ownership advocates in Tacoma, Wash., recently, an organization was effected under the name of the Washington Superpower League. At the meeting plans were adopted for a state-wide campaign to pass at the November, 1924 election, a state initiative bill giving municipalities and larger districts authority to operate public power plants.

The meeting approved the general principles of the power bill drafted by Oliver T. Erickson, councilman of Seattle, designed to control the water power of the state, while promoting public development of hydroelectric plants. It was agreed, however, to omit from the bill the provisions authorizing public operation of telephone systems by municipalities or larger public units. Legislation for public ownership of telephone systems will be left for a separate initiative measure, which is already under way in Seattle. T. J. L. Kennedy, corporation counsel, is drafting an initiative bill permitting cities to acquire, by condemnation purchase or construction, telephone systems to be city-operated, and the measure is to be backed by the cities of Spokane and Tacoma as well as by Seattle.

The league authorized Fred Chamberlain, the president, to appoint an advisory committee of fifteen or more members representing various parts of the state.

With only a few dissenting votes, the report of the light and power committee of the Municipal League, of Seattle, Wash., relating to the development of the power resources of the state, was recently adopted by the league. The report discussed the power possibilities of the state and recommended a statewide organization to promote legislation to enable districts in any part of the state to develop water power sites within their borders. A tie-up system between the new plants and those now owned by the cities is recommended, with the right of the different districts and municipalities to sell power to each other. The report recommended that the Municipal League appoint a committee to assist in the formation of an organization to foster the proposed development plan.

Voltage on Pit River Power Line Is Raised to 220,000

Actual operation of one of the Pit River circuits of the Pacific Gas and Electric Company at 220,000 volts was started on Nov. 16. The twin circuit line from Pit River to Vaca Substation was constructed for 220,000-volt operation, but the line has not been operated at this voltage until this time, owing to the fact that the line capacity was not needed and because all portions of the second circuit were not complete.

The Pit River development with its 202-mile, 220,000-volt transmission line has attracted considerable attention in engineering circles because this was the first transmission line in the world to be originally constructed for 220,000-volt operation. Up to Nov. 16 the line was operated at 110,000 volts and at the present time the second circuit is being operated at 110,000 volts in parallel with the 220,000-volt line. This method will continue until such time as the additional capacity of the second circuit at 220 kv. is needed. This change will be made when Pit River No. 3 Power House is put in operation.

Before placing the line in regular service, engineers of the Pacific Gas and Electric Company conducted complete tests of the performance and characteristics of the 220-kv. line. The results of these tests will add considerably to the data available on the performance of very high voltage transmission lines.

Federal Licenses Subjects of Three Applications

Three applications for licenses under the Federal water power act were filed with the Federal Power Commission during the period Oct. 29-Nov. 20. Two of the applications are made in connection with mining operations.

The third application is that of the Excelsior Water & Power Company, which has applied for a license for a 4,000-kva. project to be developed by slightly enlarging the capacity of the old Excelsior mining ditch, which was constructed in 1854, and by dropping the water from the ditch through penstocks about 750 ft. to a power house on the South Fork of the Yuba River. The site of the proposed power house is about one mile above Bridgeport, in Nevada County, California. The power will be delivered to the Pacific Gas and Electric Company by a transmission line two miles long connecting with the Colgate plant on the main stream of the Yuba River.

Land at Site for Priest Rapids Project Is Purchased

Seventeen thousand acres of land at the proposed site of the Priest Rapids hydroelectric plant of the Washington Irrigation & Development Company have been purchased by that company, according to Henry J. Pierce, president of the company. The site of the power project is on the Columbia River in Yakima County, Washington.

The land includes 7,000 acres which will be overflowed by the projected installation of the company's two-mile dam. Acreage on both sides of the lake is also included in the plot of ground as is frontage on three miles of the Columbia River. Mr. Pierce has stated that more than a million dollars has been spent in the purchase of land and for preliminary surveys and exploration work on the bed of the river under the dam site.

The Washington Irrigation & Development Company, a subsidiary of the General Electric Company, has been awarded a preliminary permit for the site by the Federal Power Commission and is now awaiting the granting of a license by that body. Col. W. J. Borden, of Seattle, is investigating the site for the Federal Power Commission. The initial outlay at Priest Rapids is estimated at $28,000,000, while the total construction cost is expected to run as high as $90,000,000.

Heads of the radio departments of Sacramento, Calif., electrical stores and other establishments handling radio equipment, have recently organized a new radio club in that city. The new organization has been named the Sacramento Retail Radio Dealers' Association. Meetings are held at Clobin's Grill on Tuesday noons.

Engineers State San Francisco's Water Rights in Danger

That the Hetch Hetchy water project of the City of San Francisco would be crippled financially and that the city's titles to water rights would be endangered by the acquisition of a municipal electrical distribution system in San Francisco, is the opinion expressed in a report adopted by the San Francisco chapter of the American Association of Engineers, on Dec. 11. The report recommended that a temporary disposition of power through existing agencies be made.

The report states that to finance a distribution system in San Francisco and the additional generating equipment that would be necessary, the city would have to sell bonds to the extent of $63,000,000, and if this is legally possible would seriously prejudice the issuance of $70,000,000 in bonds which are necessary for the completion of the aqueduct and the acquisition of the Spring Valley water system.

The work on the construction of the Hetch Hetchy water system must be prosecuted with diligence, according to both of the court decisions and the Raker Act which cover the city's title to the site. The engineers' report declares that if bond issues beyond the legal limit allowed the city are needed to secure funds, the work on the project may be seriously delayed or even stopped entirely. In that case other users of water may come in and, according to the report, it might be extremely difficult to force them to vacate the sites at a later date.

Speed of 105 M.P.H. Attained by Electric Locomotive

On Dec. 4 and 5, at the Erie Works of the General Electric Company at Erie, Pa., a test of a new 1,500-volt high speed gearless passenger locomotive was conducted and at the time a speed of 105 m.p.h. was attained. The new locomotive, which was designed to operate at a required speed of 81 m.p.h., was built for the Paris-Orleans Railway.

The tests were conducted in order that railway men of the United States might see the new locomotive in operation before it was shipped to France. At the same time the visitors were given an opportunity to view the operation of the 150-ton, 3,000-volt freight locomotives that have been built for the Mexican Railway Company, Ltd.

Permits for hydroelectric power projects in the Kings River Valley, requested by the Bureau of Power and Light of the City of Los Angeles, Calif., have been denied by the Federal Power Commission. The Commission has ruled that no permits shall be issued for projects in the Kings River Valley or in other portions of the proposed Roosevelt Park until after the park legislation is disposed of and the boundaries settled.

Equipment for the new General Electric radio broadcasting station in Denver, Colo., is now on the way to that city. The decision has been made to locate the station in the suburbs of the city on East Colfax Avenue, according to Harry Randall, district manager in Denver.

Sixty-eight billboards similar to this one have been used by the electrical industry in Los Angeles to increase Christmas sales.

Los Angeles Electrical Men Use 68 Christmas Billboards

Sponsored by the Electric Club of Los Angeles, Calif., the electrical industry of that city has provided an outdoor advertising campaign during the month Nov. 25 to Dec. 25, which is for the benefit of the entire industry.

The bill posters which were proposed under the supervision of the Society for Electrical Development, Inc., for use by the various electric clubs and leagues throughout the country, were furnished at a very nominal cost and are on display on the boards of Foster & Kleiser in the city proper of Los Angeles only.

There are 68 of these bill posters shown in the various sections of the city, 34 of which are illuminated and which portray the typical Christmas spirit. The poster is a highly colored one and consists of a large picture of Santa Claus with the slogans "Give Something Electrical" and "Practical Gifts that Please." There are no names whatever on the boards nor any reference to any particular electrical appliance, manufacturer, jobber or dealer.

The entire cost of the campaign amounts to slightly less than $1,700 and will be borne by the various branches of the industry in Los Angeles. The display was arranged by R. E. Smith, president of the Electric Club, who proposed the idea.

Water From Jordan River Filed on by Utah Company

The Jordan River in Utah has been restored to entry by applicants for use of water, by proclamation of the Utah state engineer, with the approval of Governor Mabey. The river was withdrawn from entry, with other main tributaries of the Great Salt Lake, in connection with the investigations of the Great Salt Lake basin reclamation project during the last few years.

Reopening of the Jordan River waters to entry has been followed with the acceptance by the state engineer of a filing made by the Utah Power & Light Company for the use of 75 sec.-ft. of water in the company's proposed Jordan steam plant extensions. With the acceptance of this filing the Utah Power & Light Company is now prepared to proceed immediately with the enlargement of the steam plant for generating electricity. The power company is proposing the enlargement of the Jordan steam plant to supplement its hydro-electric system, making Salt Lake City and tributary territory assured of a continuous power supply in event of damage to transmission lines from the north.

As stated in the application, "The water is to be used for condensing apparatus for a turbine generator in a new and additional power house to be built to the west of and adjoining the present power house situated on the company's property between South Temple and First South Streets and between Tenth West Street and the Jordan River. The water will be taken into the power house in an open flume and pumped through condensers and discharge piping into an open flume thence back to the river."

An order has been placed for a 20,000-kw. steam turbine. The plant now has two 8,000-kw. steam turbines, and with the installation of the new one its installed capacity will be about 45,000 hp. Work has been under way for some time on the enlargement of the plant, and it is expected that the total expenditure will be about $1,500,000.

During the past year and a half the power demand has increased to such an extent that the management of the Utah Power & Light Company believes that an increased capacity of this emergency plant is essential to proper protection of its patrons. It is expected that this increased capacity will afford ample protection to patrons in the Salt Lake Valley for many years to come.

The 1922 Commerce Year Book of the Bureau of Foreign and Domestic Commerce, Department of Commerce, has just been issued under the direction of Julius Klein, director of the bureau. The book contains a comprehensive review of the import and export situation and statements and tables showing the segregation of values. The book may be obtained at a price of sixty cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Electric Shovels Being Tested in Utah Copper Mine

The first of two electrical shovels to be installed by the Utah Copper Company, for test purposes in its open pit mine, is now operating, marking an important departure in operations at the company's Bingham, Utah, property. The one now operating is a direct current type, made by the General Electric Company. The other one to be installed in a short time will be the alternating current type made by the Westinghouse Electric & Manufacturing Company. These shovels will be pitted against one another to determine which type is best adapted to the company's needs.

Plans of the company are to gradually substitute electrical shovels for those propelled by steam. This will be done after a thorough test of the electrically operated shovels has been made. The one now operating at Bingham is the first to be installed in a mine west of the Mississippi River. Although there are electrical shovels operating in the West, none of them are being used in mining.

For over nine years the Chile Copper Company has been using electrical shovels in its open pit with marked success. By using electrical shovels the Utah Copper Company hopes to effect a saving of 10 cents a ton in the mining of its ore. No coal, no water, no firing, no watching of shovels during idle shifts will be necessary. Other economic features will be fewer repairs, no loss of energy as there is in steam shovel operation during periods of temporary shutdown. No time will be lost in the repairing and washing of boilers.

Lines will be laid for the bringing of current to the shovels, along the edge of the banks on the various levels on which they operate. At present power is being conducted to the shovel now in operation by means of 5,000-volt flexible armored cables.

The new shovel is equipped with four and a half ton all-manganese steel dippers. Dippers on the steam shovels have a capacity of but three tons. The 24-ft. boom is capable of making three cycles a minute. A carload of ore carrying 35 cu. ft., or approximately 48 tons, can be loaded in four and a half minutes. Material can be disposed with as much precision with regard to making a well distributed load as if done by hand.

Another innovation begun this spring by the company—the conversion of its shovels to the caterpillar type—is proving its efficiency. Formerly a railroad track had to be laid ahead of the shovels.

Danger of operation is considerably reduced, in that there is no need of keeping four men in the pit ahead of the shovels laying rails. But three men will make up a crew of the electric shovel of the caterpillar type as compared with a crew of ten necessary to man one of the old style steam shovels.

The Utah Power & Light Company has recently completed its 44,000-volt line from the Silver King Coalition mine to the Keystone mine near Park City, Utah. The line from the Park-Utah mine to the Hawkeye mine will be two miles in length, will be operated at 11,000 volts and is now under construction.

Electrical Equipment for Japan Burned Area Ordered

Orders for a considerable amount of electrical equipment to be used in the devastasted region of Japan have been received by the Westinghouse Electric International Company. According to I. F. Baker, manager for Japan for the company, many of these orders are for quick shipment and work is being rushed on the manufacturing of the equipment.

The orders include 7,000-kva., single phase, 50-cycle, 3,300-volt distributing transformers to be used in the burned district of Tokyo, to step down the voltage for the 210-volt and 105-volt supply lines. These will enable small business houses and domestic consumers to secure electric service again. These transformers are of a new design, the cases and covers being of pressed steel. Two hundred and twenty-four automatic single phase, feeder induction regulators, rated at 60 kva. with 3,450-volt primary have also been ordered from the Westinghouse company. These regulators will be used in keeping the voltage constant where light and power are both drawn from the same distributing system. This is claimed to be the largest order for regulators ever placed for export.

The Westinghouse International Company is also to supply 215 large heavy duty oil circuit breakers for controlling the power circuits in various substations throughout Japan. These circuit breakers will be of the same design as those used by the largest power companies in the empire. Provisions have been made for a speedy installation of the breakers in order that they may be placed in service immediately upon their arrival in Japan. One hundred of them are equipped with the necessary supporting framework so that with the connection of cables to their terminals they will be ready for service.

A 6,000-kw. Westinghouse Parsons reaction type turbine generator has been ordered by the municipality of Kobe. The new unit will operate in parallel with the 12,500-kw. generator which is now supplying Kobe with light and power.

Bids for Lake Cushman Project to Be Called for Jan. 1

Bids for the construction of the first unit of the proposed Lake Cushman power project, under development by the City of Tacoma, Wash., are to be issued early in December, and will be returnable about Jan. 1, 1924, according to statement of Ira L. Davisson, commissioner of the city light and water department. Ordinances providing for the issuance of bonds and letting of contracts have been presented to the city council and J. L. Stannard, chief engineer of the project, has given his final and definite estimate of the cost of constructing the first, second and third units. Mr. Stannard estimates that the city will ultimately expend $10,000,000 on the Lake Cushman project, with the total development of 140,000 hp. The exact total cost figure is $9,905,000, which will make the development cost a little less than $71 per horsepower. Estimated cost of the first unit of 50,000 hp. is $4,630,000, this figure including various features of the development which are properly chargeable to the second and final installations; the second unit of 45,000 hp. is estimated to cost $3,850,000 and the cost of the third unit of 45,000 hp. at $1,425,000 additional.

Only $4,000,000 of utility bonds will be issued for the completion of the first unit, the remaining $630,000 to be supplied out of returns from the present La Grande power plant. The new bonds will be made a lien against the earnings of the light plant only, and will not be levied against the city general fund.

The project engineers expect to have the first unit of the project completed by Dec. 1, 1925.

The concrete dam, 245 ft. high, with wing walls on either side at the top of the rock canyon on the Skokomish River, will be the important feature of the first construction, and keen competition is expected in bidding for this work. This unit will also include a tunnel around the dam through the rock; a transmission line to Tacoma, a telephone line, and clearing the reservoir basin. In order to take advantage of the absence of water from the canyon bed while the reservoir is filling, the foundation and lower part of a second diversion dam to be constructed in the lower part of the canyon are included in the first project as it will save the cost of a diversion tunnel.

On motion of Mayor A. V. Fawcett, the city council, in an amendment to the bond ordinance providing for the Cushman power development, provided for issuing the bonds in such denominations that the Tacoma public may readily find opportunity to invest in them. There will be $500,000 of the proposed $4,000,000 issue put out in denominations of $100, and as much more in denominations of $500, the remainder to be issued as $1,000 bonds. How the bonds will be placed has not yet been decided.

Large Plugs and Receptacles Are Mounted on Switchboard

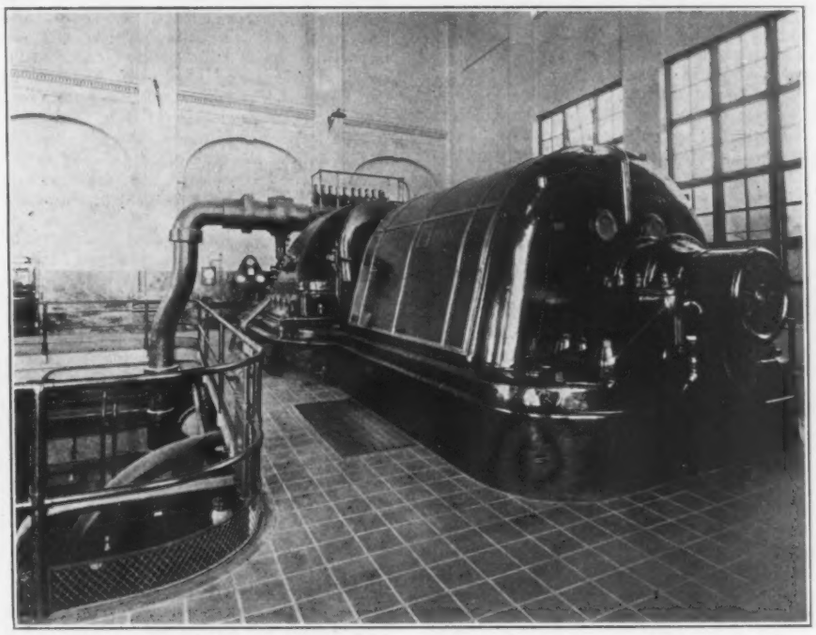
What were perhaps the largest plugs and receptacles ever made for switchboard mounting were recently designed and constructed by the Albert & J. M. Anderson Manufacturing Company of Boston, Mass. The receptacles were of the single pole type and rated at 1,500 amp., 440 volts. The overall of length is 13 9/16 in. and the maximum diameter is 7⅞ in. The total weight for each receptacle is 27½ lb.

The shells are of composition bronze and the collars which show on the face of the switchboard are highly bur-- nished. To accommodate one of these receptacles, a hole 6½ in. in diameter had to be drilled in the slate.

The plugs to accompany these receptacles are of the same rating and are 12¾ in. long by 4½ in. in diameter, each plug weighing 10½ lb. A plug and receptacle together weigh 38 lb.

As there was no precedent for so large a plug and receptacle, the Anderson company engineers designed these large devices in proportion to and on the basis of their charging plugs and receptacles which are standard equipment with manufacturers of electrical vehicles. The ample time in which these plugs and receptacles have been in service has been sufficient to afford the most thorough and complete tests; the results given have been entirely satisfactory.

Work is progressing satisfactorily on the power plant of the Longview Public Service Company, at Longview, Wash. Three 6,000-kw. generators will be installed in the first unit, this capacity to be increased as needed. Hog fuel, sawdust and wood waste will be used as fuel. Work is under way on two 300-ft. stacks, each 30 ft. in diameter at the base and 21 ft. at the top.



The new 15,000-kva. turbo-generator unit which was recently put in service in the Kettner and E Street plant of the San Diego Consolidated Gas & Electric Company at San Diego, Calif. This unit not only generates the electric power for the city of San Diego and surrounding country, but is also delivering energy to the Southern California Edison Company.

Change in Corporation Articles Brings Legal Dispute

A petition for rehearing in the case of the State of Washington ex re. Whatcom County Railway & Light Company, against J. Grant Hinkle, secretary of state, involving the question as to whether a foreign corporation shall be required to file copies of all material amendments to its original articles adopted since entering the state, has been filed in the Supreme Court by Attorney-General John H. Dunbar. The petition represents that the court's decision, if adhered to, means the complete nullification of the new 1923 law fixing a graduated scale of fees for filing certificates of increase of capital stock.

The Light Company, of Delaware, admitted to the state in 1907, with a capital stock of $1,050,000, increased its capitalization to $2,100,000 in 1910, but failed to file such amendment in this state. In 1913 the company reduced its stock to $2,000, but again failed to file such amendment.

Last June, after the 1923 high schedule of filing fees had gone into effect, the company, to escape the higher annual license fee, sought to file the amendment reducing the capital stock to $2,000, but Secretary of State Hinkle refused to accept the filing until the previous amendment increasing the capital stock to $2,100,000 was filed, and the increased new filing fee paid therefor.

Action for mandamus was brought to compel the acceptance of the last amendment without the prior one, and the court, without writing an opinion, granted the application. The state's petition for rehearing comes as a result of this court decision.

Willamette Iron & Steel Works Gets Pipe Line Contract

Contract for furnishing 25 miles of pipe for the Bull Run No. 3 pipe line that will supply water for Portland, Ore., has been awarded to the Willamette Iron & Steel Works, of Portland. The pipe line will lead from Bull Run to the Mount Taber Reservoir, the pipe being in 54 and 56-in. sizes.

Lock bar pipe will be used in the conduit. The cost of the pipe, as set forth in the contract, amounts to $2,571,404.

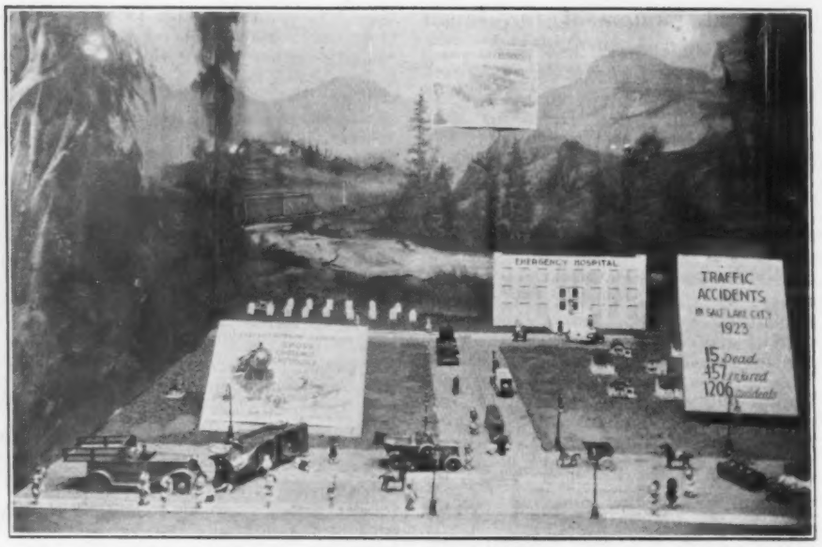
New San Diego Street Lighting System Put in Service

The first unit of the new street lighting program of San Diego, Calif., was lighted up for the first time on Dec. 7, by the Southern Electric Company, the contractors for the system. Eight blocks of Broadway, between Eighth and Sixteenth Streets, the first of the many projects under way to be completed, were flooded with light from 52 new standards.

Each standard is of the concrete type, is 16 ft. to light centers and has mounted on it a 600-cp. lamp encased in special glassware. The new posts are wired with two circuits, the corner posts being kept lighted while the others are cut off at midnight by the central station.

The great demand for concrete posts has made it impossible to get deliveries of sufficient standards to keep up with the city's lighting program. All contractors have experienced the same difficulty. The La Jolla and Coronado street lighting systems have been partly completed and await more standards to finish up.

Several more downtown street lighting projects are under way in San Diego, some of them designed to replace the old-fashioned cluster type of standards with more up-to-date single or double light standards of high candle power intensity.



Display of the Utah Power & Light Company used in connection with the safety first campaign being conducted in Salt Lake City, Utah.

Municipal Power Measure Passed by Aberdeen Citizens

At the general election held in Aberdeen, Wash., Dec. 1, voters of the city passed the proposed Wynooche power measure, which provides for development of a municipal hydroelectric plant, at a cost of $2,000,000. The measure was passed by a vote of 1,090 for and 942 against. The project has the endorsement of J. L. Stannard, chief engineer of the Lake Cushman project, of the City of Tacoma, and a report from Ben Turpen, associate of Mr. Stannard, to the city pronounces the Wynooche River basin as one of the best power sites in the Northwest. The project is estimated to have a potential capacity of 27,000 hp.

Mayor H. E. Bailey and members of the city council have pledged themselves, in resolutions passed prior to the election, to secure complete and positive data to determine approximately the cost of the impounding basin, the dam site, water and power rights, and of a distributing system, before any bonds are offered for sale. If the cost of the undertaking proves to be in excess of present estimates, they agree to submit the proposition once more to the voters. The election was preceded by a bitter fight between the supporters of the measure and those opposed to its passage.

The city council of Tacoma, Wash., has approved the purchase by the light department of a plot of ground 120 x 170 ft., adjoining the North End substation, to be used as the site for another substation, needed when the Cushman power project is producing.

Use Utility Company Windows in Safety First Campaign

As a further step in the safety first campaign being conducted in Salt Lake City, Utah, an exhibit of miniature vehicles showing how accidents happen was recently placed in the window of the Utah Power & Light Company. The display showed an intersection of a busy street, with two automobiles colliding, and street cars striking a pedestrian, an automobile and an ice wagon.

A police ambulance was shown rushing a victim to the emergency hospital while another ambulance was on the way to the scene of another accident. At one side of the miniature vehicles was depicted a graveyard with tombstones bearing such inscriptions as: "Gasoline and Moonshine Don't Mix," "Speed Hound," "Reckless Driving," etc.

The city recently began its safety first campaign by arranging for the blowing of whistles at 3:30 o'clock each school afternoon, to warn automobile drivers that schools are being dismissed.

New Railway Substations to Be Built in Los Angeles

The Pacific Electric Railway Company of Los Angeles, Calif., has recently announced that it will erect two new substations in the vicinity of Los Angeles. The growth of traffic has necessitated the installation of the equipment.

One of the new substations will be erected at Second and Toluca Streets in Hollywood and the other will be placed in North Long Beach. The estimated cost of the two stations is $245,000.

Involving an ultimate expenditure of $5,000,000 for hydroelectric power development in Cowlitz County, Washington, Charles C. Garland of Tacoma, Wash., has filed an application with the Washington state supervisor of hydraulics for permit to appropriate waters of the Toutle River. The application states that a dam 510 ft. in length and 102 ft. high will be built, giving a storage capacity of 100,000 acre-feet.

Test Efficiency of Lighting in Denver Federal Building

To the intense gratification of the electrical industry in Denver, Colo., the Treasury Department has detailed C. A. Peterson to inspect the 5,000 electric lamps and lighting units in the Federal Building there. Mr. Peterson arrived from Washington early in December and immediately put his foot-candle meter into operation, much to the chagrin of federal employees and newspaper men who tracked him. One of the latter in a local paper described the meter as a hybrid microscope, telescope, and periscope, but the objects of the instrument were carefully detailed; in fact Mr. Peterson's recommendations for higher reflection coefficients and luminaires with better diffusion were outlined in the papers.

According to reports from Denver, this activity and the publicity attendant upon it has aroused the interest of some local commercial firms who have been unmoved in the past on the subject of more efficient illumination. The Electrical Cooperative League of Denver is capitalizing on the activity.

Electric Transportation Medal Awarded Chicago Road

The Charles A. Coffin gold medal, emblematic of distinguished contribution to the art of electric transportation, was awarded to the Chicago, North Shore & Milwaukee Railroad Company at Atlantic City, recently. The award was made before the executives of most of the electric railways of the United States, assembled for the annual convention of the American Electric Railway Association.

In addition to the medal, which was received by Britton I. Budd, president of the Chicago, North Shore & Milwaukee, a check for one thousand dollars was given Louis Homans, the railroad's supervisor of bridges and buildings, for the employees' mutual benefit association, of which he is president.

This is the first award made in the transportation field—a previous one in the power development field having been awarded to the Southern California Edison Company—by the Charles A. Coffin Foundation, which was established in December, 1922, by the General Electric Company to provide encouragement and recognition for notable achievements in electrical development. The competition was open to all electric traction lines in the country, both urban and interurban, and a number of them entered it.

P.C.E.A. Men Address San Diego Electric Club Members

Wm. H. ("Bill") Talbott fired the first guns for the 1924 Pacific Coast Electric Association Convention at the Dec. 4 meeting of the San Diego Electric Club when he opened a campaign for memberships in the association among San Diego electrical men. A. E. Holloway, chairman of the commercial section, aided and abetted Mr. Talbott by presenting an outline of the work of the Pacific Coast association and especially of the work of the commercial section.

With L. M. Klauber, general superintendent of the San Diego Consolidated Gas & Electric Company, as president of the Pacific Coast Electric Association, the 1924 convention of the association will probably be held in San Diego, it was announced, and San Diego is determined to have a good showing in the association membership. The response to Mr. Talbott's appeals is said to have been very encouraging for a large local membership.

C. C. Bradford, construction superintendent of the Riter-Conley Company, in charge of erecting the new 6,000,000-cu. ft. gas holder in San Diego, explained construction details and gave statistics regarding the new holder in a brief talk.

Guests at this meeting were D. H. Perkins, T. P. Garrett, and Chris Goldkamp, of the power company, A. J. Schoch, assistant superintendent of equipment of the street railway company, and C. H. Paulin, Westinghouse Electric & Manufacturing Company representative from Los Angeles. The meeting had the largest attendance of any noon meeting the club has had this year.

Annual Report of Secretary of Commerce Is Published

The annual report of the Secretary of Commerce has been printed and is now ready for distribution. The present volume is the eleventh report of the same nature and has been transmitted to Congress.

The report is grouped under five main headings and gives a comprehensive idea of the work done by the department during the past year. The sections under which the report is grouped are: General Economic Situation During the Fiscal Year; Administrative Work of the Department; Investigations into Various Economic Problems in Pursuance of the Organic Act; Legislation Needed; and Special and More Detailed Reports of the Different Bureaus and Divisions of the Department and Special Recommendations of Their Directors.

Los Angeles Electrical Men Hear S.E.D. Vice-President

Forty leaders of the electrical industry in Los Angeles, Calif., honored William L. Goodwin, operating vice-president of the Society for Electrical Development, Inc., of New York, and Samuel Taylor, secretary, Pacific Coast Electrical Association, and Pacific Coast manager, Society for Electrical Development, Inc., at a luncheon at the Jonathan Club on Dec. 5. Among the speakers were W. L. Frost, who presided as chairman, and Mr. Taylor, who explained the reasons for Mr. Goodwin's visit to the Pacific Coast at this time.

Mr. Goodwin spoke at length on the plans and scope of the work which the Society for Electrical Development, Inc., is doing and their plans for the future. He also outlined, for the benefit of those present, the reasons for the existence of the Society and the work which had been accomplished in the past and of the cooperation which the Society is extending at the present time, to the various electric clubs and leagues throughout the country.

Prof. F. C. Palm, of the history department of the University of California, was the speaker at the meeting of the Oakland Electric Club, held at the Hotel Oakland, Oakland, Calif., Dec. 10. Professor Palm spoke on "Present Conditions in Europe."

Utility Company Employees Name Officers

Officers have been elected by the Parent Body of the Pacific Service Employees' Association to serve for the ensuing year. R. W. DuVal, San Francisco, was elected chairman; W. D. Skinner, Oakland, vice-chairman; Miss B. J. Dale, San Francisco, secretary; J. C. Carmody, executive secretary and treasurer. On the executive committee, H. J. Smith, Van E. Britton, W. R. Baker, and W. N. Munro were elected.

This association, which is comprised of a paid-up membership of 6,000 employees of the Pacific Gas and Electric Company, has been organized for the past six years. Twelve territorial sections are maintained covering the various divisions of the state in which the Pacific Gas and Electric Company operates. Each of these sections maintains its own organization consisting of local employees of the company.

Successful Customer Ownership Drive Held in Colorado

The first customer ownership campaign of the newly merged Public Service Company of Colorado is said to have been one of the most successful campaigns of its kind ever staged. All records for similar campaigns in the Doherty organization were broken and according to Clare N. Stannard, vice-president and general manager of the company, the fondest hopes and expectations of company officials were shattered as indicated by the fact that more than double the number of shares provided in the original allotment of stock were sold inside of ten days.

Over 5,500 customers purchased stock in the amount of 16,591 shares. Sales were all made through employees of the company or by the electrical industry which was represented in the campaign by the Electrical Cooperative League of Denver.

The operating department with V. L. Board, general superintendent, at the head, led all divisions in the number of shares sold and was followed by the commercial department organization with R. G. Gentry in charge. Jack Barker, purchasing agent of the company, won the prize for high individual sales with a record of nearly 4,000 shares.

Appropriation of $500,000 from the Skagit River construction fund, to cover current operations in building the first 50,000-hp. unit of the hydroelectric plant in Whatcom County, Washington, was approved by the Seattle city council finance committee recently. The sum will come out of the $11,000,000 appropriated for the work, and will leave a balance of about $896,000 in the fund, to be available for completion of the power plant and of two substations in Seattle.

According to a report of J. D. Ross, superintendent of the municipal light department of Seattle, Wash., 891 meters were installed in the City of Seattle during October, a record in the city's history. A total of 224 electric ranges was also put into use, Mr. Ross's report shows. Installation of the new meters will increase the city's electric current load by 5,000 kw.

Meetings

Jobbers Hold Quarterly Meeting at Del Monte, Dec. 6-8

The Pacific Coast Electrical Supply Jobbers' Association held its fourth meeting of the year at Del Monte, Calif., Dec. 6, 7 and 8. Coincidently, there were held also a meeting of the Advisory Committee of the California Electrical Cooperative Campaign and a meeting of the "Smiles" sub-committee of the Public Relations Committee of the Pacific Coast Electrical Association.

In accordance with the usual custom, the electrical jobbers had a series of closed meetings at which matters of intimate interest were discussed. The open meeting, to which all were invited, was held on the morning of Dec. 8. The first speaker was R. A. Balzari, who spoke briefly on the subject of the so-called "Smiles" campaign, a movement inaugurated by a sub-committee, of which he is chairman, of the Public Relations Committee of the Pacific Coast Electrical Association.

Following Mr. Balzari came W. L. Frost of the Southern California Edison Company, who made an exceptionally effective presentation of the new merchandising policy of the Southern California Edison Company. The importance of Mr. Frost's remarks necessitate a more full presentation of this matter, which will appear in an early issue of the Journal of Electricity.

Mr. Frost was followed by W. L. Goodwin, operating vice-president of the Society for Electrical Development, Inc., of New York City. Mr. Goodwin spoke of the purposes for which the Society was organized and the experiences they had had in fostering and developing the cooperative movements for the benefit of the electrical industry in the eastern territory. "The Society," said Mr. Goodwin, "has established headquarters on the Pacific Coast, in the Rialto Building, San Francisco, in charge of Samuel H. Taylor, who has been connected with the Pacific Coast Electrical Association for some time. The purpose of opening these offices is to afford means of making an intimate study of the many cooperative movements now under way on the Pacific Coast so that the entire electrical industry throughout the country may have the benefit of whatever is learned in this way. At the same time the Society will be in a position to extend to such movements here the benefit of the experience of the Society in other sections of the United States."

It is proposed that local electrical clubs shall be organized in every population center on the Pacific Coast large enough to support such a club, the Society helping in the institution of these organizations, giving them the benefit of its experience in similar activities.

Mr. Goodwin's remarks received close attention throughout, and the session closed at 12 o'clock noon.

Among those who attended the meeting were W. L. Goodwin, Samuel H. Taylor, R. A. Balzari, Ray Murphy, Clarence Thompson, Carl Heise, J. H. Jamison, A. M. Irwin, C. C. Hillis, W. E. Berry, T. E. Bibbins, D. E. Harris, Sam Russell, Fred Todt, Harry Garbutt, Earl Fisher, E. O. Shreve, F. E. Boyd, T. M. Simpson, Harry Dailey, H. E. Sanderson, W. M. Deming, J. S. Tritle, Garnett Young, Earl Alexander, J. H. Lavenson, W. L. Frost, H. H. Courtright, A. Emory Wishon, H. H. Walker, Curtis Hawley, V. C. Hartley, O. W. Lillard, H. B. Squires, C. E. Sherman, Harry Turner, W. S. Greenfield, Wesley Todt, Harry Woodward, Glenn Arbogast, Ben Holst, Newton W. Graham, and Charles Listenwalter.

Rocky Mountain N.E.L.A. Is to Hold Quarterly Meeting

A quarterly meeting of the Rocky Mountain Division of the National Electric Light Association is scheduled to be held in Denver, Colo., on Dec. 18, according to D. C. McClure, division president. This is the first meeting of its kind ever to be held in the Rocky Mountain territory and is to be held as the result of a recommendation made at the annual convention of the association at Glenwood Springs last September.

A joint session with the Rocky Mountain Committee on Public Utility Information, an offshoot of the divisional organization although entirely separate, will be held at the Denver Athletic Club, starting in the morning and continuing throughout the day. E. A. Phinney of Golden, Colo., is in charge of the program while George E. Lewis, manager of the Rocky Mountain Committee, is looking after the attendance.

Entertainment has been planned by the utility companies of the city starting with a luncheon at the Denver Athletic Club with Ernest Stenger, receiver of the Denver Tramway Company, as host; a dinner with stunts provided by employees of the Mountain States Telephone & Telegraph Company of which Ben S. Read, president of the Colorado Public Service Association, is the head, and a theater party at night to be given by the Public Service Company of Colorado.

The committee in charge of this part of the program consists of V. L. Board, E. A. West, John F. Greenawalt, and S. W. Bishop. Plans are being made to accommodate about 75 guests with representation from Wyoming and New Mexico, where the next quarterly meetings will be held.

COMING EVENTS

Rocky Mountain Division, National Electric Light Association—

Quarterly Meeting—Denver, Colo.
Dec. 18, 1923

Rocky Mountain Committee on Public Utility Information—

Denver Colo.—Dec. 18, 1923

Members of the Idaho Public Utilities Commission recently returned from an inspection trip to practically all power plants of the Idaho Power Company in southern Idaho. Those making the trip were J. M. Thompson, president of the commission; Will H. Gibson and Fred L. Graves, commissioners, and John Kopelman, engineer.

Cooperative Campaign Meeting Is Held at Del Monte

The California Electrical Cooperative Campaign held an open meeting at Del Monte, Calif., on the evening of Dec. 6. R. E. Fisher presided and V. C. Hartley, executive secretary, acted as secretary of the meeting.

After passing upon a few matters of routine business, the speaker of the evening, W. L. Goodwin, operating vice-president of the Society for Electrical Development, Inc., of New York City, was introduced. Mr. Goodwin gave an entertaining and instructive discussion on cooperative movements, as conducted by the Society in the eastern territory. His discussion was illustrated by exhibits of leaflets and booklets accompanied by samples of supporting newspaper advertising showing how numerous campaigns for the stimulating of the use of electricity have been inaugurated and carried through to successful conclusion.

Mr. Goodwin expressed a desire on the part of the Society, through its recently opened San Francisco offices in the Rialto Building, to supply to new cooperative movements now under way, or that may be inaugurated on the Pacific Coast, full data in intimate detail and complete instructions as to how to inaugurate similar campaigns here on the Pacific Coast. He stated that the Society would go to the extent of furnishing all literature and advertising copy and instructions to field operatives for this purpose.

The meeting was well attended. Many of the most prominent manufacturers, jobbers, contractor-dealers and central station executives were present.

Los Angeles Electric Club to Entertain Kiddie Koop

The Electric Club of Los Angeles, Calif., at its regular meeting on Dec. 24, will entertain the children of the Kiddie Koop Orphan Home, as has been the custom since the organization of the club. At this meeting, the ball room of the Biltmore Hotel will be appropriately decorated for the occasion, with an immense Christmas tree in one corner of the room and with a fireplace built with bricks purchased by the individual members of the club. Santa Claus will enter the room from this fireplace. Ladies will be present at this meeting to assist the men in taking care of the kiddies and to look after their welfare.

The kiddies have all written to Santa Claus expressing their desires, which will be granted by Santa Claus on the twenty-fourth. Those in charge of the various committees are as follows: H. L. Harper, general chairman; Frank Weiss, finance; H. E. Sherman, Jr., arrangements and decorations; R. D. Manahan, transportation; R. Lockart, entertainment; K. E. Van Kuran, presents, and Paul D. Howse, Santa Claus.

The Ogden, Utah, chapter of the American Association of Engineers is making a successful membership drive, according to the various committee reports submitted to the chapter at the weekly luncheon held on Nov. 23. H. J. Craven presided at the luncheon, at which thirty engineers were present. The drive will continue until engineers of the various classes are members of the chapter.

Manufacturer, Dealer and Jobber Activities

Altorfer Brothers Company, Peoria, Ill., has recently published a 20-page booklet entitled, "How 437 Dealers Brought Customers to Their Stores." The booklet is designed to give dealers information that will aid them in selling washing machines. Many suggestions for increasing sales and for attracting customers into the store are included in the text of the booklet. Illustrations of attractively designed window displays and store interiors are also a part of the subject matter. Copies of the book may be obtained from the manufacturer.

Templeton, Kenly & Company, Ltd., Chicago, Ill., has recently announced that almost immediately following the earthquake in Japan cablegrams for pole pulling and straightening jacks were received by it. The equipment will be used in the work of rehabilitating the power and telephone lines in Japan.

Maydwell & Hartzell, Inc., a San Francisco firm representing eastern manufacturers, is now located at 158 Eleventh Street, at the corner of Natoma Street. The company is considering the opening of a branch office in Los Angeles. The concern has recently been appointed distributors for the following companies: Hazard Manufacturing Company, Wilkesbarre, Pa.; L. D. McFarland Company, Ltd., Sandpoint, Idaho; Miniature Breaker Company, Long Island, N. Y.; and the Park Metalware Company, Orchard Park, N. Y.

The Thermal Syndicate, Ltd., New York, N. Y., has recently issued a 16-page booklet entitled, "Vitreosil Data." The booklet contains information regarding the general characteristics of the company's line of ware.

The California Wire Company, of Orange, Calif., has recently secured orders for weatherproof wire which call for over five million pounds of the company's product. The Southern California Edison Company has ordered 2,035,000 lb.; the Pacific Gas and Electric Company, 1,750,000 lb.; and various other utility companies on the Pacific Coast have ordered quantities varying from 100,000 lb. to 500,000 lb. The company's plant at Orange is now in operation 24 hours a day 6 days a week.

Garnett Young & Company, of San Francisco, Calif., and the **Pratt Chuck Company,** Frankfort, N. Y., have announced that after Jan. 1, 1924, the Pacific Coast agency of the New York manufacturer will not be handled by Garnett Young & Company. The San Francsico firm has had the Pacific Coast agency for a number of years.

Uehling Instrument Company, Paterson, N. J., has issued Bulletin No. 150, which gives a full description with photograph of a combined barometer and vacuum recorder for checking steam turbine and condenser performance. The bulletin also contains a sectional drawing and full sized reproduction of actual chart. The instrument operates on the hydrostatic principle and employs no diaphragms, tube springs or multiplying level mechanisms.

The Standard Underground Cable Company, manufacturer of bare and insulated electrical wires and cables and accessories, whose present Pacific Coast factory has been located in Oakland, Calif., since 1898, is completing the erection of a new and enlarged concrete and steel factory on a large tract surrounded by paved streets in Emeryville, Calif., and adjoining and connected with the Southern Pacific Railway main line. The main factory building is a two-story reinforced concrete structure 60 ft. wide by 320 ft. long, arranged for a third-story addition when required. That building adjoins a steel and concrete crane-bay approximately 50 ft. wide by 340 ft. long and 45 ft. clear height, adjoining a private railroad siding along the greater length. Separate from the main factory building are a power and transformer house 40 ft. x 80 ft., and carpenter and machine shop 30 ft. x 60 ft., both of reinforced concrete construction. The crane bay of the factory will be served by a 10-ton electric bridge crane, and the two-story section and shipping platform, by a two-ton cab-operated monorail. The power house contains two Stirling type water tube boilers equipped with automatic oil burners, which will be used for necessary heating and processing. All the manufacturing equipment, however, is electrically operated throughout.

California Corrugated Culvert Company, West Berkeley and Los Angeles, Calif., has issued an attractive booklet entitled "The Story of Pure Iron." The book is illustrated and gives interesting information on the production of pure iron and on its applications. Photographic reproductions show the service to which pure iron products may be put and the results of years of employment of this metal in various exposures.

The Nichols Electric Furniture Company, Bennington, Vt., has issued a circular on electrically wired furniture. This furniture is shipped from the factory completely wired and ready for use. It offers attractive merchandising possibilities for dealers, particularly at the holiday season. The line includes wired tea tables, serving cabinets, tables and dressers. Descriptive circulars will be furnished upon request to the factory.

H. B. Squires Company, San Francisco and Los Angeles, Calif., has been appointed California agent for the Packard Electric Company. Stocks of power and distributing meters and of series regulating meters for series street lighting service will be carried at San Francisco.

George A. Gray Company, San Francisco, Calif., has been appointed agent for the Pratt Chuck Company, Frankfort, N. Y.

The General Electric Company has developed and will have in production about Jan. 1, 1924, a new design single phase, induction voltage regulator emphasizing several desirable features in design. Among these are a tank which is highly resistant to rupture; a mechanical structure of increased rigidity with a view of decreasing noise; coils with improved bracing to prevent insulation troubles due to line short circuits; greater accessibility of operating mechanism, and improved voltage regulation due to the more rapid correcting of voltage changes.

Century Electric Company, St. Louis, Mo., has issued a new catalog on its squirrel cage induction polyphase two and three phase motors. These are known as "Type SC" and are furnished in ¼ to 15 hp.

This intrepid cyclist, back in the days when bicycle races were, won the first prize in the annual grind over the ungraded road and trail between Tacoma and Olympia, Wash. His time for the 32-mile stretch was 1 hour and 32 minutes. Since achieving fame in this event, F. W. Rust, the winner of the aforementioned race, has entered the electrical business in Seattle and is now president of F. W. Rust & Company, Inc. As the "sport speedster model," despite the fact that it is equipped with air cushion seat and electrical siren, is not needed in the electrical contracting business, Mr. Rust has abandoned his bicycle and now devotes his entire time to the electrical industry.

Personals

D. D. Sturgeon, a prominent electragist of Denver, Colo., has been elected vice-chairman of the Electrical Co-operative League of that city. In 1895 Mr. Sturgeon moved from his home in Newark, Ohio, to Denver and immediately entered the service of Albert Sechrist, the first lighting fixture specialist in the Rocky Mountain region. During the following seventeen years Mr. Sturgeon passed through every department of that firm, which had grown to be the largest fixture manufacturing concern in the West. Mr. Sturgeon, in addition to memberships in the League, American Institute of Electrical Engineers, the Denver Electrical Contractors' Association, and Master Builders' Association, takes an active part in the Rotary Club, Motor Club, Press Club, and the Denver Civic & Commercial Association.

D. D. STURGEON

A. F. Combs, of the Automatic Electric Company of Chicago, Ill., was a recent Los Angeles visitor as was **H. C. Webb** of the Commercial Department, El Paso Electric Railway Company of El Paso, Texas, and **A. L. Dunmire** of the Line Material Company of Oakland, Calif.

Andrew C. Stayrt, a prominent auto accessory dealer in Denver, Colo., has reorganized the Thor Shop in that city and has moved it to a prominent corner location in the building of the B. K. Sweeney Electrical Company, 13th and Broadway, Thor distributors for the Rocky Mountain region. Formal opening of the new establishment was made Nov. 24.

George H. Sicard, vice-president of the Pratt Chuck Company, Frankfort, N. Y., is a recent visitor to the Pacific Coast. He spent a week in San Francisco and some time in Los Angeles, then went to Seattle, Portland and other northwestern cities, returning from there to the factory.

George B. Sanford, division manager of the Great Western Power Company at Sacramento, Calif., was in San Francisco recently to attend the quarterly meeting of the Western Irrigation Equipment Association.

Miss J. Frances Emans, of the Southern California Edison Company, Los Angeles, Calif., has been appointed chairman of the Women's Public Information Committee of the Pacific Coast Electrical Association. The first meeting of the committee will be held in San Francisco, Calif., on Dec. 29, 1923.

F. J. Airey, district manager, Pacific States Electric Company; **C. E. Listenwalter**, Listenwalter & Gough; **J. L. Kline**, president and general manager, Western Light & Fixture Company; **A. B. Vandercook**, sales manager, Western Electric Company; **C. E. Spalding**, General Electric Company; **N. W. Graham**, president, Graham-Reynolds Electric Company; **C. B. Hall**, president, Illinois Electric Company; **H. E. Sherman, Jr.**, vice-president and sales manager, Illinois Electric Company; **W. L. Frost**, manager commercial department, Southern California Edison Company; **P. H. Booth**, Pacific Coast manager, Edison Electric Appliance Company; **J. H. Jamison**, manager merchandising division, Westinghouse Electric & Manufacturing Company, were among the Los Angeles electrical men visiting the quarterly meeting of the Pacific Coast Jobbers' Association at Del Monte on Dec. 6, 7 and 8.

William Porter White has been appointed to act as personal assistant to M. O. Troy, new executive assistant manager of the central station department of the General Electric Company, Schenectady, N. Y. His headquarters will probably be at Schenectady in common with Mr. Troy.

G. G. Jeter, H. F. McRell and **Clinton Jones** have been appointed sales managers in the central station division of the General Electric Company, Schenectady, N. Y. Mr. Jeter will have charge of transformer accessories, advertising and publicity; Mr. Jones will have supervision of power transformers, and Mr. McRell, distribution transformers.

Al. Smith, sales manager of the Walker-Pratt Manufacturing Company, Boston, Mass., was in Salt Lake City to attend the meeting of the Commercial Section of the National Electric Light Association.

H. I. Klehm, district agent of The Washington Water Power Company at Ephrata, Wash., is spending a few days in Spokane.

Fred S. Mills, representative of the National X-Ray Reflector Company, Chicago, Ill.; **L. A. Hobbs**, representative of the Brascolite Manufacturing Company, St. Louis, Mo.; **E. P. Markee**, manager Edison Lamp Works of the General Electric Company, Los Angeles, Calif.; **Frank van Gilluwe**, illuminating engineer, Western Electric Company, Los Angeles, Calif.; **W. A. Alden**, illuminating engineer, Westinghouse Electric & Manufacturing Company, Los Angeles, Calif.; **D. C. Pence**, manager lamp department, Illinois Electric Company, Los Angeles, Calif., and **T. H. Hunter**, illuminating specialist, Pacific States Electric Company, Los Angeles, Calif., were among those from Los Angeles attending the meeting of the Illuminating Engineering Society of the Pacific Coast, held in conjunction with the jobbers' convention at Del Monte.

Harry Byrne, president of the North Coast Electric Company, Seattle, Wash., is a recent visitor to San Francisco, having stopped there on his way to the convention of the Electric Supply Jobbers' Association at Del Monte, Calif.

R. W. Atkinson has been appointed chief engineer of the Standard Underground Cable Company, Perth Amboy, N. J.

P. E. Matteson, sales manager of the Intermountain Electric Company, Salt Lake City, Utah, has returned from a ten-day trip through Idaho.

W. H. Millmore, who has been employed by the Great Western Power Company for the past nine years and who has recently been chief operator of the North Beach plant of that company, has left for Papeete, Tahiti, where he will install a power plant and introduce to that community the use of electrical appliances.

Guy W. Faller, assistant general manager of the Denver Gas & Electric Light Company, Denver, Colo., has been elected as assistant vice-president of the newly formed Public Service Company of Colorado. This company was formed by a combination of the Denver Gas & Electric Light Company and the Western Light & Power Company.

G. J. Shurts has been appointed production manager of the lead cable department of the Standard Underground Cable Company, Perth Amboy, N. J.

James F. Pollard, the recently appointed vice-president and general manager of the Coast Valleys Gas & Electric Company, graduated from the University of California, class of 1912, as Bachelor of Engineering. From that year to 1915 he was employed in the engineering department of the Pacific Gas and Electric Company and spent some time on the Drum Development of that company. From 1915 to 1918 he was assistant engineer on the California Railroad Commission, working in the gas and electric rates department. In 1918 he was appointed commercial manager of the Sierra and San Francisco Power Company and the Coast Valleys Gas & Electric Company and was assistant to Capt. H. F. Jackson, who was then president of both companies. From 1920 to November, 1923, he was vice-president in charge of operations of the Coast Valleys Gas & Electric Company. When the H. M. Byllesby Engineering Company, of Chicago, Ill., bought the common stock of the Coast Valleys Gas & Electric Company, thereby acquiring ownership of the company, Mr. Pollard was appointed vice-president and general manager by Mr. Byllesby.

JAMES F. POLLARD

A. T. Parsons, advertising manager for the Pelton Water Wheel Company, San Francisco, Calif., has resigned from that company to join the agency force of the Equitable Life Assurance Society, with headquarters at 315 Montgomery Street, San Francisco.

S. W. Bishop, manager of the Electrical Cooperative League in Denver, addressed the Master Plumbers' Association in that city, Dec. 3, on cooperative development within an industry, the object being to assist the plumbers and supply houses in the establishment of a sanitary development league.

Clifford Bartlett, district manager of the Pacific Gas and Electric Company, Willows, Calif., has been made assistant manager of the North Bay division of that company, with headquarters at San Rafael, Calif. Mr. Bartlett joined the force of the Northern California Power Company (now a part of the Pacific Gas and Electric Company) at Redding, Calif., on Oct. 1, 1906. In February, 1910, he was made district manager at Willows, which position he has held ever since.

Prof. Osborne, of the University of Washington, Seattle, Wash., spoke on "Illumination as Applied to Workshop and Factories" before the Electric Club of Seattle recently.

W. L. Goodwin, operating vice-president of the Society for Electrical Development, Inc., is spending some time on the Pacific Coast. Mr. Goodwin has always been one of the foremost in the ranks of progressive workers for the entire industry and his connection with all branches of the business has been marked for its constructive effort. Mr. Goodwin was born in San Francisco, Calif., and his connection with the electrical business began in that city. He was for some time with the Sterling Electric Company of San Francisco, and its predecessors, and at the time of the formation of the Pacific States Electric

W. L. GOODWIN

Company, in July, 1909, was made vice-president and general sales manager of that company. He remained with the Pacific States Electric Company until 1916 when he joined the force of the General Electric Company at New York, N. Y. In 1920 Mr. Goodwin left the General Electric Company to become operating vice-president of the Society for Electrical Development, Inc., and since that time has devoted all of his efforts to the improvement of general conditions and merchandising methods.

P. H. Booth, sales manager of the Edison Electric Appliance Company, Los Angeles, Calif., has left for the factory of the company at Chicago, Ill., and will also go on to New York. During his trip East Mr. Booth will visit several offices of the company and will return to California in time for the Christmas holiday.

F. J. Airey, district manager of the Pacific States Electric Company, Los Angeles, Calif., just recently returned from an extensive trip to the East.

R. E. Boyle, formerly with the General Electric Company, Los Angeles, Calif., has recently been transferred to the Cleveland, Ohio, office of that company.

W. T. Wyatt has become associated with Guy Cooper, 341 South Western Avenue, Los Angeles, Calif., in the sale of Servel electric refrigeration plants.

Guy Cooper, 341 South Western Avenue, Los Angeles, Calif., has been appointed the Pacific Coast agent for Servel electric refrigerating equipment. He will distribute from the southern city.

B. E. Rowley, of the Edison Electric Appliance Company, Salt Lake City, Utah, has gone to the factory at Chicago to attend the sales convention to be held there. He will spend the Christmas holidays at Winnipeg, Manitoba, and will return shortly after the first of the year.

A. C. Cornell, Denver, Colo., manager of the Western Electric Co., Inc., was the captain of the leading Rotary Club team in the recent Community Chest campaign staged in the mile high city.

R. O. Ashton has been placed in charge of Frigidaire development in the Rocky Mountain region. Mr. Ashton is a factory expert from Dayton and will have headquarters at the Delco Light Company branch in Denver, of which N. B. Acers is the district manager. Local representation in that city has already been secured with the Public Service Company of Colorado.

J. D. Ross, superintendent of the Seattle, Wash., lighting department, recently addressed residents of the Ravenna district of that city on the "Future of Light and Power in Seattle," the lecture accompanied by stereopticon slides.

C. B. Hawley, of the Intermountain Electric Company, Salt Lake City, Utah, was a recent visitor to San Francisco on his way to the convention of the Electric Supply Jobbers' Association at Del Monte, Calif.

E. A. Evans, of the Westinghouse Lamp Company, Salt Lake City, Utah, has just returned from a ten-day trip through Montana.

J. W. Elwood, of the General Electric Company, New York, N. Y., is a recent San Francisco visitor.

H. W. Fisher has been appointed technical director in charge of electrical engineering for the Standard Underground Cable Company, Perth Amboy, N. J. He will also continue as manager of the lead cable and rubber departments of the company.

L. J. Zimmerman, of the Electro Medical Battery Company, New York, N. Y., is in San Francisco on business.

W. W. Jourdin, chief electrical engineer for the Inspiration Consolidated Copper Company, Miami, Ariz., spoke recently before the Globe Luncheon Club on the subject of "The Trend in Electric Power Generation."

N. W. Graham, president of Graham-Reynolds Electric Company, Los Angeles, Calif., and one of the leading electrical men of the West, has just been elected chairman of the Pacific Coast Electrical Supply Jobbers' Association. "Newt" Graham has been connected with the firm of which he is now senior member ever since its organization, nearly twenty years ago, as Holabird-Reynolds Electric Company. About eight years ago this firm, which is one of the oldest electrical supply jobbing houses in Los Angeles, was re-

N. W. GRAHAM

organized under the new name of Graham-Reynolds Electric Company with Mr. Graham as president. In addition to other duties Mr. Graham finds time to serve as a member of the Advisory Committee of the California Electrical Cooperative Campaign and also as a member of the Executive Committee of the Electrical Supply Jobbers' Association of the United States. He is always active in anything that tends to improve conditions within the industry or that will advance the welfare of its members.

Addison N. Clark, electrical engineer, for some time identified with the electrical heating industry as southern California district manager for the Scheeline Manufacturing Company of San Francisco, Calif., manufacturers of Hulbert electro-steam heating equipment, has recently resigned to become sales manager of the Triumph Electric Heating Corporation of southern California with headquarters at 1620 South Flower Street, Los Angeles.

Harry Coombs, of the Bryan-Marsh division of the National Lamp Works, Chicago, Ill., has been in Salt Lake City for about two weeks.

G. R. Randall, of the Salt Lake Electric Supply Company, Salt Lake City, Utah, has returned from a trip to Detroit, Mich.

D. H. Redinger, resident engineer of the Southern California Edison Company at the Big Creek plant, was recently in San Francisco on business.

C. C. Shaw, president of the Lalley Electric Company, Portland, Ore., is a recent visitor to San Francisco.

R. C. Dodd, at present operating superintendent of the Hawthorne Works of the Western Electric Company at Chicago, Ill., has been promoted to be assistant works manager at the new Kearny, N. J., works. This appointment is effective March 1, 1924.

Trade Outlook

San Francisco

Retail trade conditions continue to improve and buying is still heavy. Electrical appliances are in good demand and jobbers' stocks are becoming depleted. Express shipments from eastern factories have in some cases been necessary to fill shortages.

Construction materials are in demand and building shows little indication of reduction.

Finances are good and bank reserves continue to increase. Loans are being liquidated by country correspondents and money is available for industrial and commercial purposes.

Large export shipments of lumber have been noted and prices are firm. Rice crops are all harvested and bid fair to show a substantial profit for growers. The lack of rain has caused some concern among live stock men.

Holiday buying is satisfactory from a retail point of view and now warrants the expectation that it will exceed all previous records. The only lines that have been disadvantageously affected are those of clothing and ready-to-wear garments.

Spokane

Slight changes are noted in general conditions. Due to low price of wheat, farmers show a tendency to hold shipments. However, local flour mills worked at capacity up to Dec. 1.

A reduction in output is looked for among Spokane wood-working plants. Several sharp reductions are reported, especially in plants shipping East.

Building construction is confined to small jobs. The State Highway Department will expend $5,300,000 next year, a fair portion to be used in eastern Washington.

The Washington Land & Irrigation Company has filed application with the Federal Power Commission for final permit to proceed with development of Priest Rapids on Columbia River, where this company expects to develop important electro-chemical and electro-metallurgical industries. This program should have an important bearing upon the Columbia Basin irrigation project.

Local bond houses have sold the $2,200,000 issue of Washington Water Power Company's short term 6 per cent coupon bonds, the subscriptions exceeding the issue.

It is estimated that the reserves added to the Bunker Hill mine, Coeur d'Alene district, Idaho, by the discovery of the great lode in the seventeenth level will prolong the mine's life by several years, the size of the ore body and the ore values remaining unimpaired at that depth.

Los Angeles

Electrical retail business in Los Angeles is satisfactory. Local merchants report heavy buying, particularly on the smaller lines of appliances. Major household appliances are also showing satisfactory sales. Electric heaters are the one type of appliance not obtaining a fair share of sales. This has been due to warm weather prevailing thus far this season.

Sale of radio sets and supplies has increased considerably during the past two weeks and bids fair to outdo previous seasonal business. Sales of water heaters and ranges are progressing well and manufacturers of the former are particularly optimistic over present conditions.

During the month of November, 5,595 building permits valued at $13,512,042 were issued. Los Angeles bank clearings for the month of November were $602,754,994.54, the third highest total on record.

Denver

Considerable excitement has been occasioned in commercial circles recently over the opening up of an extensive natural gas field about 75 miles north of Denver. Tests made prior to the capping of the well indicate an ample supply for Cheyenne, Wyo., Denver and all the smaller cities in northern Colorado. Primarily intended to develop the oil structure, if any, the natural gas well, the first of a number being drilled, will be of vast importance in the upbuilding of the state's industrial life. Considerable business activity has already developed.

November local bank clearings totaled $146,577,695, an increase of 4.3 per cent over November, 1922. The total gain thus far this year over 1922 is 7.76 per cent.

A total of 570 building permits were issued during November, with an estimated cost of $1,142,000. The total for the first 11 months of 1923 is $19,921,050, compared with $16,706,895 for a similar period last year.

Local electrical jobbers report a steady movement in nearly all lines. The Christmas merchandise business is in the lead, due to special activities of the entire industry in promoting the sale of appliances. Present indications of net profit for the calendar year lead 1922 in several of the larger local supply houses.

Salt Lake City

According to authentic reports, more new money has come into Utah for the creation of producing machinery of all kinds in the past year than any other year in the state's history. Salt Lake City and the surrounding country now appear logically destined for a great forward movement in industry and population, and men usually conservative in their statements are enthusiastic over conditions as reflected in business. The development of the steel and iron industry is one of the important factors in the situation, although there has been increased activity in industry along other lines during the past year. Still greater industrial expansion is anticipated for the coming year.

Mercantile business in Salt Lake has increased so far this year between 15 and 20 per cent over last year, and collections have been better than for several years.

As to the mining situation, this section is particularly fortunate in having mines producing ores carrying a sufficient percentage of lead to allow profitable operations at present metal prices, so the industry was not dealt a staggering blow at the expiration of the Pittman act.

There has been considerable early Christmas buying and electrical dealers are securing a good share of this business.

Portland

Business in the Portland district shows a very gratifying increase for the past month. Bank clearings gained 20 per cent over November, 1922. Lumber exports showed a gain of 150 per cent over the same month a year ago, and the number of building permits issued, 185 per cent.

During November shipping entrants totaled 370,000 tons register, as against 267,000 tons in November, 1922. Wheat, flour and lumber shipments continue very active and export tonnage is high.

The population of the city, given as 258,000 in the 1920 census, has steadily increased since then and is now well up toward 325,000. During the year 7,000 telephones have been added. School attendance has increased 2,000.

The building program shows no apparent slackening, judging from present activity and the plans now being checked by city officials prior to granting permits. Downtown real estate transfers are quite active.

Lumber production is maintained at a high level. The feature of the Douglas fir situation is the placement by the Japanese government of contracts for nearly 100 million feet of lumber to be shipped during the coming month. Domestic trade, both rail and water, has fallen off slightly but is expected to recover shortly. California orders continue to arrive in large volume.

Seattle

Retail trade shows a tremendously increased volume. Retailers predict the holiday trade this year will eclipse previous December records. The demand for better quality of merchandise is apparent, with less criticism of prices. Wholesale trade is satisfactory, although buying is conservative and for short-time needs. Collections are good.

Conditions in the electrical jobbing and retail fields otherwise show no particular change over the past two weeks. Dealers report unusual interest in electrical equipment. The Modern Homes Exposition, with its electrical displays and exhibits, is expected to do much to influence holiday buying in household appliances. Movement in electric ranges is brisk, both for new apartment structures and residences. Stocks are reported in good shape, with prices holding, and collections fair to good.

Local construction has slackened slightly although there is an unusual amount of building under way for this season, due in part to excellent weather conditions. Several important new projects are planned for early beginning, including the new Hotel Winthrop in Tacoma, on which bids will be opened early in December, and which will cost $1,500,000.

"Rubber Insulated Wires and Cables for Every Electrical Purpose"

"DETROIT" RUBBER COVERED WIRES

Detroit N. E. C. Standard

Rubber Covered Wires and Cables
Automobile Wires and Cords
Radio Headset Cords
Telephone Wires
Lamp Cords Antenna Wire

MANUFACTURED BY
DETROIT INSULATED WIRE COMPANY
DETROIT, MICH.

Three Pacific Coast Stocks Carried by

Baker-Joslyn Company

183-199 First St.
SAN FRANCISCO

330-332 Azusa St.
LOS ANGELES

2424-28 First Ave. So.
SEATTLE

RELY ON LOS ANGELES SEATTLE SAN FRANCISCO SERVICE

Distributers
Hot Galvanized Pole Line Hardware
Wood Poles, Cross Arms and Pins
Construction and Linemen's Tools
Porcelain and Glass Insulators
Porcelain Knobs, Tubes and Cleats
Insulated and Bare Copper and Iron Wires
Rigid Iron Conduit and Fittings
Flexible Metallic and Non-metallic Conduit and Armored Conductors
Switches, Switchboards and Fuses
Insulating Materials

WOODWARD
Water Wheel Governors

Another Woodward Development— Motor-Driven Fly-Balls

Woodward governors may now be furnished with motor-driven fly-balls for alternating current hydro electric units. The details of this system have been carefully worked out and, after having been in use for over a year, it is now being offered and recommended as the ideal means of eliminating the belt drive.

Full protection is provided against stoppage of the motor caused by current or voltage failure.

It is a particularly valuable feature for vertical shaft units where the belt must, of necessity, go under the generator and often below the generator floor in a more or less inaccessible location.

The polyphase induction motor may be depended upon to run for years with no attention except an occasional oiling. This is a great advantage in any case, but especially so in a station operated automatically or by remote control.

While the belt drive is capable of giving good service, it requires frequent attention and occasional renewal. It is often very inconvenient to install, and an uneven belt is often the cause of poor regulation.

Motors may be applied to governors now installed with belt-driven fly-balls.

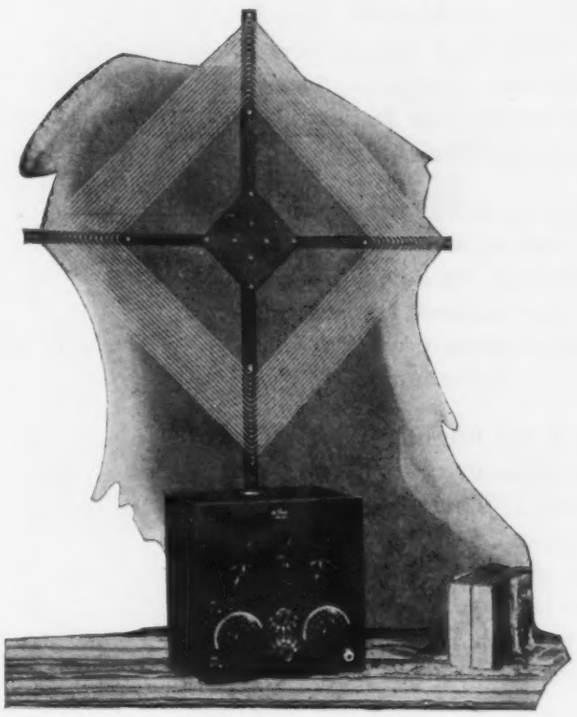
An enlarged view of the control mechanism showing the application of the motor and safety trip. The small motor is for adjusting the speed for synchronizing.

A Woodward oil pressure water wheel governor, motor driven.

WOODWARD GOVERNOR CO., Rockford, Ill.

Why

"The House That SERVICE Built" Distributes



De Forest Radio Receivers

Long range, great selectivity, simplicity of operation, portability, freedom from static interference, and minimum current consumption are the paramount features of the two new reflex models.

The D-7A Set, listing at $132.50, uses ¾ ampere and storage battery with three tubes giving three stages of radio and two stages of audio frequency amplification. Dry battery tubes may be used with adaptors.

The D-10 Set, listing at $159.00, uses dry battery tubes and gives three stages each of radio and audio frequency amplification. Space is provided in the cabinet for both A and B batteries. Standard base tubes may be used with storage battery.

Extremely portable and efficient, requiring use of the loop only, without ground connection. These sets are ideal for the home, the camper, and the hotel or apartment house dweller.

We are exclusive distributors of DeForest Radio Apparatus in California, except the southern part of tne state.

Active exclusive agents will be appointed in all cities in this territory who will operate on a basis similar to the "A" agents on Mazda lamps. Particulars regarding this plan will be available in a few days. If you are interested, write us promptly and you may be the lucky one in your town.

ELECTRIC APPLIANCE COMPANY

807-809 Mission Street **San Francisco**

The Eyes of the Engineering World are turned toward the West

"The eyes of the engineering world are turned toward the great utilities of the West in their record breaking hydroelectric developments," said D. C. Jackling in a recent interview on the occasion of the Convention of the Pacific Coast Electrical Association. Such is indeed the case, for the power companies of the Pacific Coast have established world-wide leadership through the character and magnitude of their operations.

But the eyes of the engineering world are turned toward the West for another reason, as well. If the West has gained recognition through its development of hydroelectric energy, it has also assumed leadership by inaugurating the first comprehensive program for making that energy really effective in the home.

"The 'Check' Seal program is the brightest spot in the electrical merchandising situation in the country," said an eminent Easterner recently. There can be no doubt that the people of the Pacific Coast are particularly fortunate. They have an industry which is not only devoted to developing abundant electrical energy for their needs but an industry which is actively engaged in seeing to it that they get the greatest possible service from that energy.

The "Check" Seal stands for good workmanship, standard materials and fair prices. It identifies qualified electrical contractors who operate on this basis as well as the standard electrical merchandise they sell. The "Check" Seal serves the public as a reliable guide to satisfactory electrical service.

T. M. Reg. 1921

PACIFIC STATES
ELECTRIC COMPANY

SAN FRANCISCO LOS ANGELES OAKLAND PORTLAND SEATTLE SPOKANE

T. M. Reg. 1921

Quality Electrical Merchandise
THE MARK THAT MEANS INSPECTED & CERTIFIED by PACIFIC STATES ELECTRIC COMPANY
Chosen from the Markets of the World

The Cost of Electrical Service

In estimating the cost of electrical service, it is important to reckon not merely the amount of your light bill at the end of the months, but the number of tiresome jobs electricity does for you and the amount of time and money it saves.

If your house is completely and satisfactorily wired, you can take full advantage of these economies. Hence, before you build, buy, or rent a house, be sure that the electrical installation has been made by a qualified electrical contractor.

The difference between the bid of the responsible, competent electrical contractor and the irresponsible is seldom more than one half of one per cent—($50.00 on a $10,000.00 house). That is a small price to pay for the assurance that the workmanship is high grade, that the materials and appliances used are *standard*, and that enough convenience outlets and wall switches have been installed in every room.

In selecting a qualified contractor with whom to do business, the orange and blue "check" seal of the Pacific States Electric Company furnishes a helpful guide. It identifies a complete line of standard electrical materials and appliances, some of which are listed on this page and some of which will appear in later advertisements of this series. These are distributed by contractors and dealers who are qualified in every way to give you the kind of service which you have a right to expect.

The electrical appliances shown on this page, together with other standard electrical products, certified by the "check" seal, are described in our new booklet, "The Electrical How for Householders". You will enjoy this booklet, with its many practical suggestions for the convenient and economical utilization of electricity in your home. It may be obtained free from any electrical contractor or dealer displaying this seal.

A few of the standard products sold under the "Check" Seal

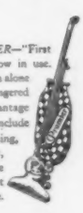
HOTPOINT-HEDLITE GLOW HEATER—Clean and concentrated heat, when and where you want it, is ideally supplied by the Hotpoint-Hedlite automatic heater. It is especially adapted for warming small rooms, bathrooms, etc., and for drying hair after a shampoo. Should the heater be accidentally upset, the automatic gravity switch breaks the current and closes the circuit again when the heater is righted.

HOTPOINT ELECTRIC TOASTER—Toasts two slices of bread at one time, quickly and evenly. The coffee, tea or cereal may be kept hot on top of the toaster at the same time the bread is toasting. The toast rack fits the top of the toaster snugly and provides a handy receptacle for passing the toast. It has an ebonized handle that always remains cool. The Hotpoint toaster is fully guaranteed for one year by the Edison Electric Appliance Co.

HOTPOINT GRECIAN URN PERCOLATOR SET—Very desirable for use in large families, on social occasions or for gift purposes. It is constructed throughout of copper and finished in polished nickel plate. Tray, Sugar Bowl and Creamer are of copper, heavily nickel-plated and polished. Sugar Bowl and Creamer are silver lined.

WALKER DISHWASHER—The one thoroughly practical dishwasher. On the market seven years and steadily growing in popularity. Thousands now in use. It can be directly connected with water supply and drain pipes and practically eliminates the housewife's most disagreeable task. It saves fully an hour a day in time and is easily cleaned. You may safely entrust your fine glass and fragile china to the Walker.

PREMIER VACUUM CLEANER—"First among cleaners." Half a million now in use. Cleans in two ways, by powerful suction alone or by suction plus a rubber-fingered brush. This feature is of great advantage to the housewife. Attachments include tools for cleaning mattresses, clothing, walls, moldings, pillows, upholstery, furniture, pianos, etc. It may be quickly attached to any convenient outlet and costs but little to operate.



THOR ELECTRIC WASHING MACHINE—The Thor washes everything from fine laces to grimy overalls without any rubbing. It does the week's washing in half the time required by hand methods and eliminates all the hard work of hand rubbing and rinsing. The Thor is scientifically constructed and solidly made. Always ready and seldom gets out of order. On the market 14 years. Over 750,000 now in use.

TUMBLER SWITCHES—The G. E. tumbler switch is the latest device for controlling circuits, and stands up better than any other device made for a similar purpose. It is self-indicating—up and it's on, down and it's off. It can be operated with the arm or elbow should the hands be full. Supplied in both flush and surface types. Furnished in brushed brass or special finishes if desired.

THOR ELECTRIC IRONER—Does the average family ironing in about one-fifth the time it takes to do it by hand—and does it better. It handles everything from household linen to lingerie. The cost of operating is about 5 cents an hour. No special skill is required to operate the Thor. The control is automatic and there is no complicated mechanism to get out of order. It is one of electricity's greatest gifts to modern housewives.

WAYNE ELECTRIC BELL RINGER (TRANSFORMER)—The Wayne Bell ringing transformer is a General Electric product, which eliminates dry batteries. The Wayne Bell Ringer is connected with the household light circuit and adjusts the current to the requirements of the electric bell system. The Wayne is easily installed and functions continuously and satisfactorily at a negligible cost to the owner.

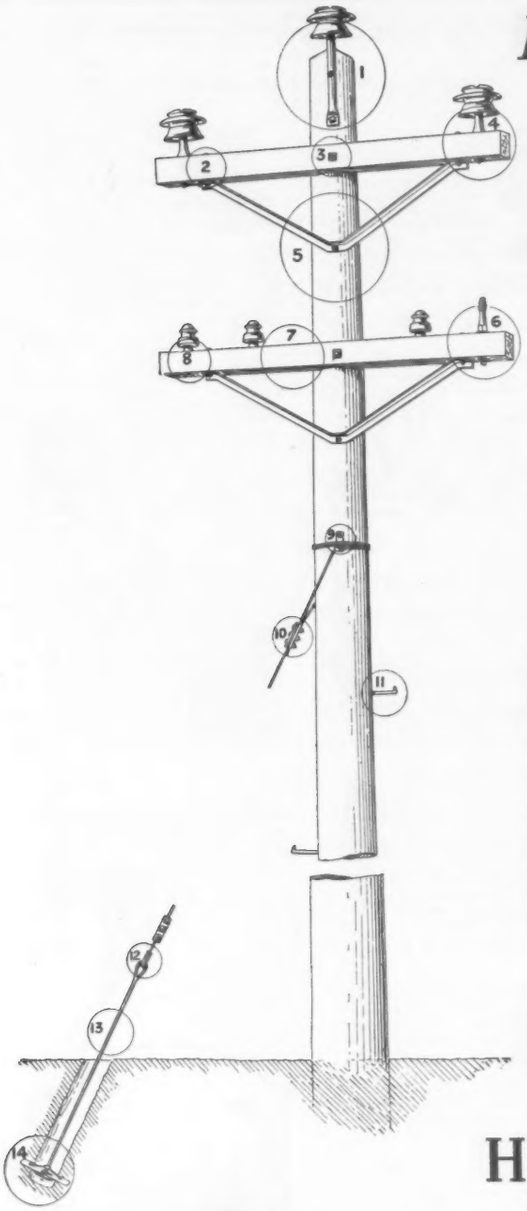
PACIFIC STATES ELECTRIC COMPANY

OAKLAND LOS ANGELES SAN FRANCISCO SEATTLE PORTLAND SPOKANE

Go to dealers and electrical contractors who display the "Check" Seal

Above is a reproduction of one of the full page newspaper advertisements which is telling the public how to get better electrical service.

"THE HARDWARE MAKES THE LINE HUBBARD MAKES THE HARDWARE"



Hubbard Anchor Rods Are Drop Forged

Hubbard Anchor Rods (No. 13 in the illustration at the left) are drop forged and not welded. This insures a more reliable product as the possibility of burning through over heating in the welding process is eliminated.

As an additional factor of safety, Hubbard Anchor Rods are made of open hearth steel with a tensile strength of between 55 and 60 thousand pounds. They are weather proofed by double hot dipping in pure zinc.

The various items listed below indicate the position Hubbard Hardware occupies in the diagram.

1. Pierce Pole Top Pins
2. Hubbard Carriage Bolts
3. Hubbard Machine Bolts
4. Pierce Forged Steel Pins
5. Hubbard Cross Arm Braces
6. Pierce Spring Thread Pins
7. Douglas Fir Cross Arms
8. Locust Insulator Pins
9. Hubbard Guy Hooks
10. Hubbard Guy Clamps
11. Hubbard Pole Steps
12. Hubbard Guy Thimbles
13. Hubbard Anchor Rods
14. Hubbard Steelwing Anchor

HUBBARD & COMPANY
Pittsburgh, Pa.

Quality Electrical Merchandise — THE MARK THAT MEANS INSPECTED & CERTIFIED by PACIFIC STATES ELECTRIC COMPANY — Chosen from the Markets of the World

T. M. Reg. 1921

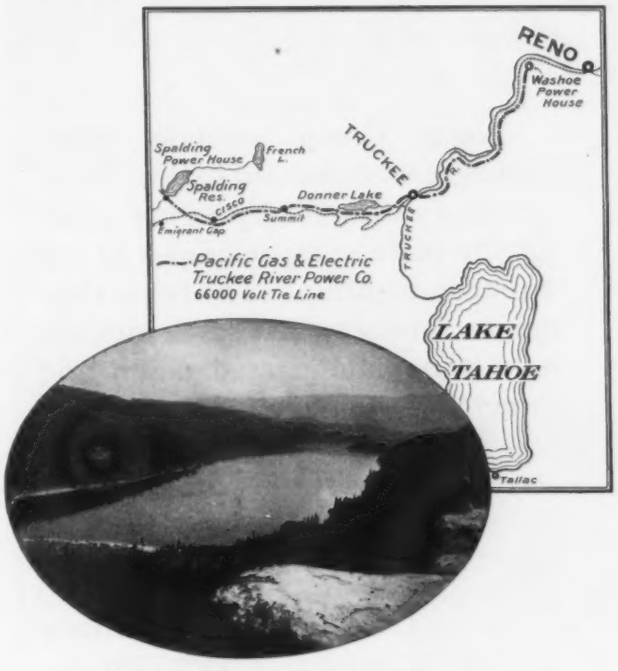
PACIFIC STATES ELECTRIC COMPANY

SAN FRANCISCO LOS ANGELES OAKLAND PORTLAND SEATTLE SPOKANE

Distributors for the Pacific Coast

Insulating the power routes of the West—No. 9

New P. G. & E.---Truckee River power tie Line to be completely Locke equipped



Donner Lake on New Pacific Gas & Electric — Truckee River Power Tie Line.

The New 66 KV tie line between the Pacific Gas & Electric Company and the Truckee River Power Company is to be equipped throughout with Locke Insulators. This line running from Lake Spaulding Power House, past Donner Lake, to Washoe Power House, near Reno, crosses the Sierra Nevada Mountains at Summit and will be subject to as difficult conditions as any line in the West.

The insulators must stand snow, sleet and extreme cold in the winter and extreme heat and atmospheric disturbances in the summer. It is a singular tribute to the dependability and in-built quality of Locke Insulators that they have been selected for this exacting service.

Manufactured by

LOCKE INSULATOR CORP.

VICTOR, NEW YORK

Quality Electrical Merchandise — THE MARK THAT MEANS INSPECTED & CERTIFIED by PACIFIC STATES ELECTRIC COMPANY — Chosen from the Markets of the World

T. M. Reg. 1921

PACIFIC STATES ELECTRIC COMPANY

SAN FRANCISCO LOS ANGELES OAKLAND PORTLAND SEATTLE SPOKANE

Exclusive Pacific Coast Sales Agents

"Bolted Through Solid Earth"

The "Never Creep" Anchor Is An Iron Dead Man

The above photograph shows a 16,000 lb. strain being applied to a Chance "Never Creep" Anchor at a recent test in Oakland, Cal.

The diagram shows the Chance "Never Creep" Anchor installed.

"Never Creep" anchors never pull against disturbed earth. They are easily installed by boring a hole for the plate at right angles to the direction of strain. The rod is then driven through solid earth into the hole; the plate passed down and hung over the rod. It is not necessary to dig a large pit or to cut a channel. The strain automatically tightens the anchor and there is never any creeping or skidding.

"Never Creep" anchors are made in sizes to meet various strain requirements.

Manufactured by

CHANCE COMPANY
CENTRALIA, MO.

T. M. Reg. 1921

PACIFIC STATES ELECTRIC COMPANY

SAN FRANCISCO LOS ANGELES OAKLAND PORTLAND SEATTLE SPOKANE

T. M. Reg. 1921

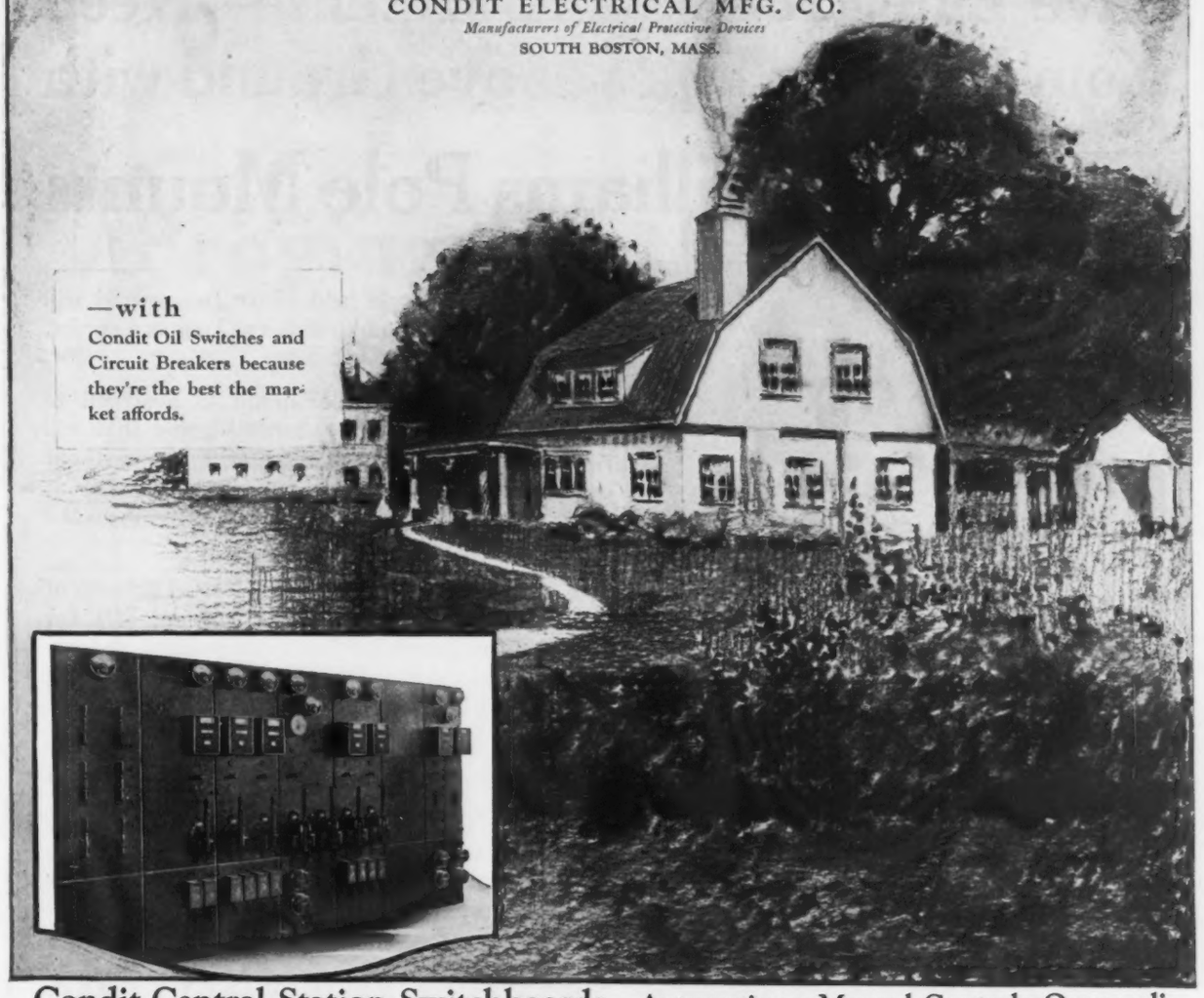
Exclusive Pacific Coast Sales Agents

yours

Designed and built to *your* specifications, the Condit Central Station Switchboard is as individual as the home planned by an architect to meet *your* particular needs.

And like the well planned house it can be designed to meet *future* as well as present requirements.

CONDIT ELECTRICAL MFG. CO.
Manufacturers of Electrical Protective Devices
SOUTH BOSTON, MASS.



—with
Condit Oil Switches and Circuit Breakers because they're the best the market affords.

Condit Central Station Switchboards—Automatic or Manual Control—Our application engineers and switchboard specialists at your service. Publication 1006 on request.

CONDIT

High and Dry

A concrete base several inches above the ground with four anchor bolts to hold the malleable side supports; heavy bolts extending between the side supports and around the pole—a high and dry mount that is stronger than any ground setting!

Save Line Trouble and Expense---Keep Your Wooden Poles above Ground with

Williams Pole Mounts

(Patented)

Before and After a test for strength

The concrete base will hold

A wooden pole held above the ground will last from three to four times as long as a similar pole setting in the ground.

The Williams Pole Mount is designed to provide a permanent, rugged support that will develop the full strength of the pole without distortion of the mount, and eliminate decay at the ground line, thus adding many years to the life of the line.

The simple method of installation permits of the use of Williams Pole Mounts not only for new lines, but also for replacements and renewals on existing lines without disturbing the overhead load.

It is adaptable to all types of ground for both city and rural lines, and means decided saving in transmission line cost and maintenance.

Write for full information today concerning this thoroughly tested service.

THE CLARK-WILLIAMS ENGINEERING CO., INC.

1710 Main Street

Bridgeport Connecticut

"The Towers That Go Together"

3. Testing the Fit

Proving Up the Details

The Story of Service

Detail Drawings
Erection Diagrams
√ **Testing the Fit**
Shop Fabrication
A Better Galvanized Surface
The Hot Dip Process of Galvanizing
The Testing Block
Bundled and Ready for Shipment
Bolts and Nuts

THE ENGINEERING DETAILS for each type of Transmission Structure are proved up at our Tower Plant before fabrication begins.

ONE SET OF MEMBERS is punched and assembled in the Tower Yard using the length of bolts listed in the erection diagram.

SPACING OF BOLT HOLES and clearances are checked so there need be no clipping of angles nor drifting of holes in the field.

FIELD CONNECTIONS that might prove difficult are found and improved, to prevent delays in the final erection.

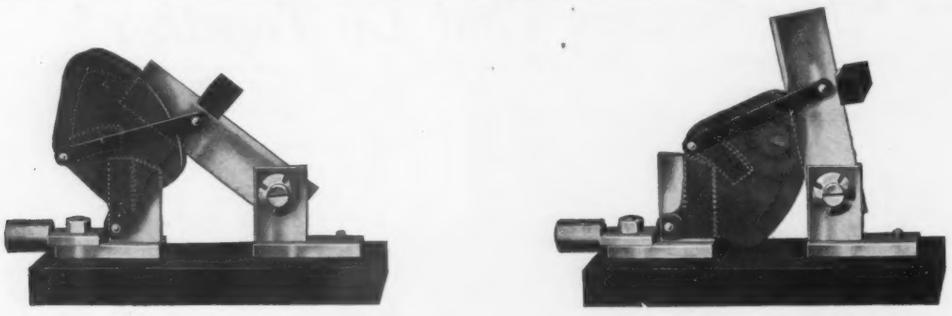
PACIFIC COAST STEEL COMPANY

Manufacturers of

OPEN HEARTH STEEL

STRUCTURAL SHAPES, MERCHANT AND REINFORCING BARS
TRANSMISSION TOWERS AND STRUCTURES

General Offices: Rialto Bldg., San Francisco Plants at San Francisco, Portland, Seattle



The HOW of Snuf-Arc Construction

A moulded barrier of fireproof insulating material swings closely over the contact jaw post as soon as the blade leaves the contact. The heavy center piece (see dotted lines) and the two flat side sections instantly "snuff" the arc and prevent side flare to adjoining posts or to the sides of the switch box.

Ahead of the Compensator on 440 V. A. C. Work, You Can Depend Upon a Snuf-Arc

as a disconnecting switch that guarantees safety, even if pulled on a heavy overload when the compensator is out of order.

No. 60362
3-Pole, Fusible
Snuf-Arc

The old style of enclosed switch has been the cause of serious damage and accident in 440-V. A.C. work. The 100% safety of a Snuf-Arc costs very little more than an ordinary switch—practically nothing when compared to the possible damage and injury eliminated.

Used as an operating switch on 440 volt lines or when pulled on an overload such as a stalled A.C. motor, there is no danger from arc damage because the flash is broken before it really gets under way.

Compact, yet adequate in size; carefully made and assembled like the rest of the Circle-T line; designed and tested to meet every operating condition—it is the ideal 440 volt switch.

Ask your jobber for Bulletin No. 4.

The Trumbull Electric Mfg. Company

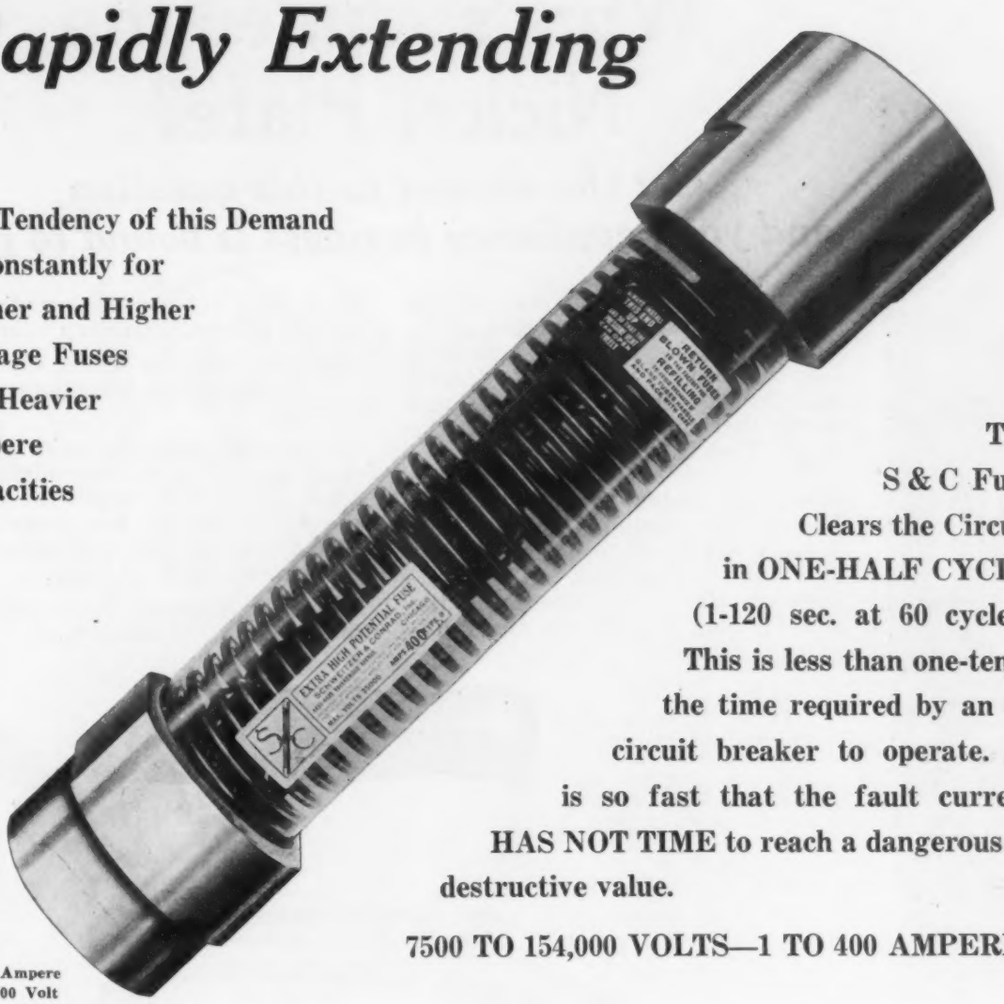
595 Mission St. **San Francisco, Cal.**

Factory and General Offices
PLAINVILLE, CONNECTICUT

Branches in New York
Chicago, Boston, Philadelphia

The Field for the Application of the S&C Fuse is Rapidly Extending

The Tendency of this Demand is Constantly for Higher and Higher Voltage Fuses and Heavier Ampere Capacities



400 Ampere
25,000 Volt
S & C Fuse

The S & C Fuse Clears the Circuit in ONE-HALF CYCLE (1-120 sec. at 60 cycles) This is less than one-tenth the time required by an oil circuit breaker to operate. It is so fast that the fault current HAS NOT TIME to reach a dangerous or destructive value.

7500 TO 154,000 VOLTS—1 TO 400 AMPERES

THERE IS NO SUBSTITUTE FOR THE S&C FUSE

SCHWEITZER S&C CONRAD, INC.

4435 RAVENSWOOD AVENUE CHICAGO, ILLINOIS U.S.A.

Los Angeles, 211 I. W. Hellman Bldg.
Oakland, 708 Oakland Bank Bldg.

What's Under the Nickel Plate?

Get the answer to this question and your appliance business is bound to pay

You are in business to stay and are determined to see your business grow. You know it is not how appliances look that counts, **but how they stand up.** Do they give real value for the money they cost—do they satisfy the user? That is the real test.

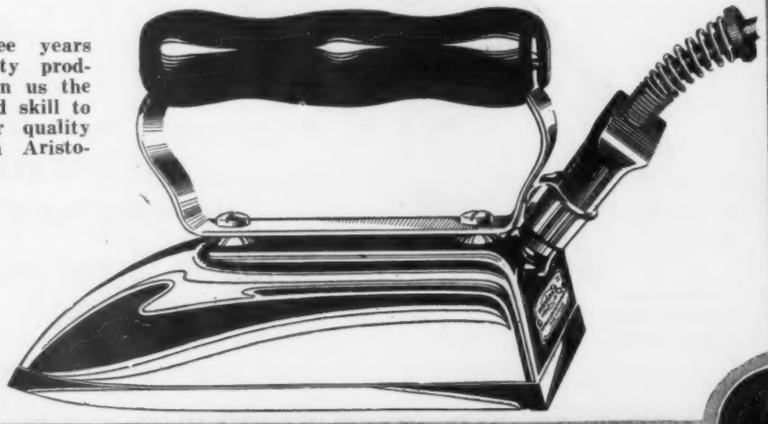
There's only one way you can be sure—look under the nickel plate. Examine the appliance yourself, take it apart, see how it's made and what goes into it. Then look to the manufacturer. Has he the experience, the stability and, importantly, the facilities to turn out electrical appliances which it will really pay you to sell?

That's the basis on which we want you to judge us—and Sunbeam Aristocrats.

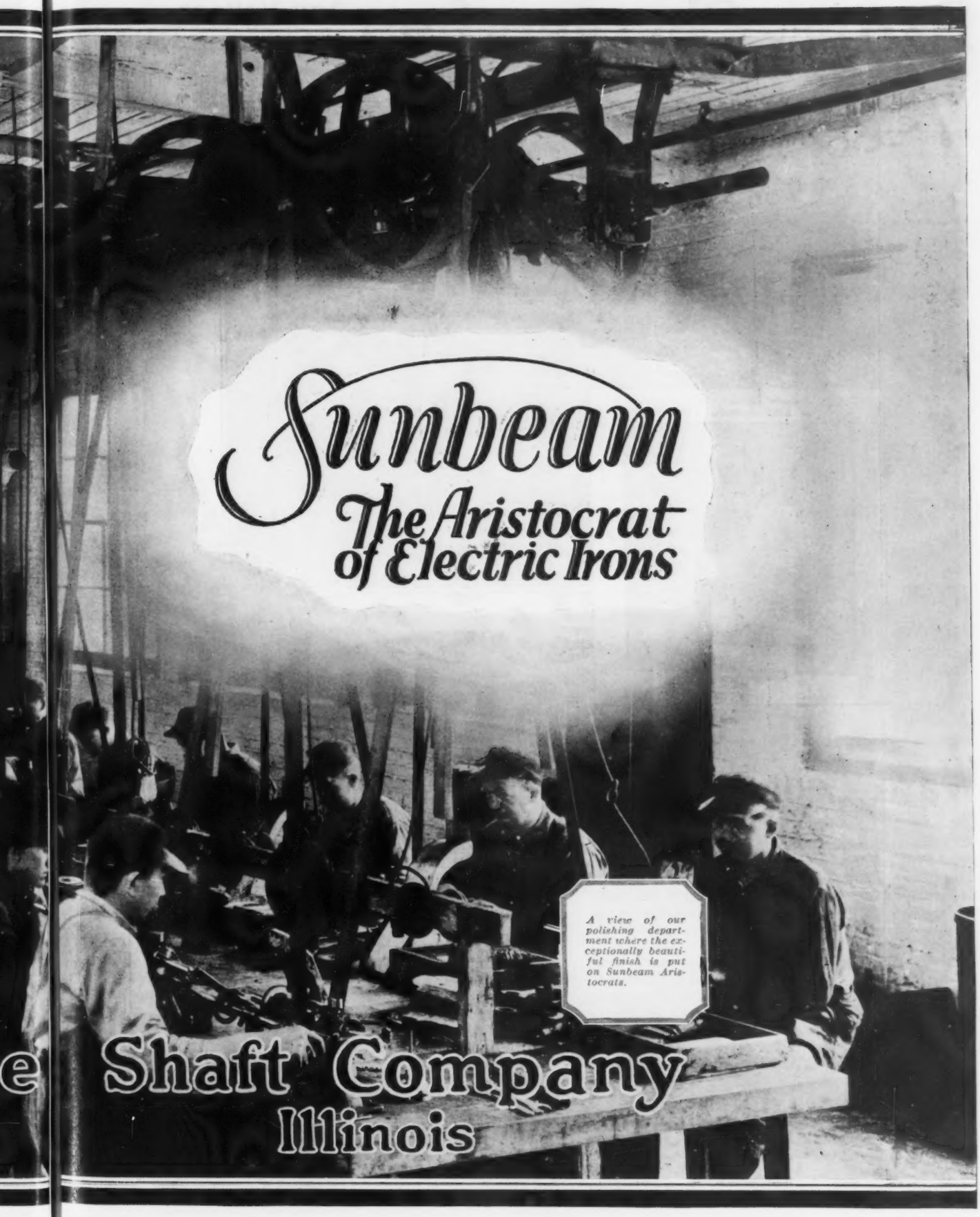
We are in business to make money. So are you. It is to your advantage as well as ours that we put the greatest value and utility into every Sunbeam Aristocrat. For in doing so both of us can sell more of them.

Examine a Sunbeam Aristocrat and draw your own conclusions.

Thirty three years making quality products has given us the experience and skill to build superior quality into Sunbeam Aristocrats.



Chicago Flexible Shaft Co.
Chicago


Sunbeam
The Aristocrat of Electric Irons
A view of our polishing department where the exceptionally beautiful finish is put on Sunbeam Aristocrats.
Shaft Company
Illinois

Battery Chargers for Any Voltage— Any Charging Rate

Ward Leonard VITROHM Battery Charger

Dependable communication is vital to naval efficiency: That is why dependable service is so supremely essential in naval radio equipment. The fact that Ward Leonard Vitrohm Radio Battery Chargers are today extensively used in the U. S. Navy is therefore a significant tribute to the superior efficiency of Ward Leonard Battery Charging equipment.

The Radio Battery Charger in operator's room above, is used in large quantities by the Government, is of the fixed charging rate type and provides facilities for handling two batteries, one constantly on charge and the other on discharge; the batteries being respectively transposed from charge to discharge and vice versa, by throwing a 4-pole double-throw knife switch. The resistors are of the famous Ward Leonard VITROHM construction. We make a complete line of battery chargers for all sizes and types of batteries — from the small home charger shown at the right to the sizes required by any battery charging stations—all of them are designed and made under specifications equally as rigid as those imposed by the Government.

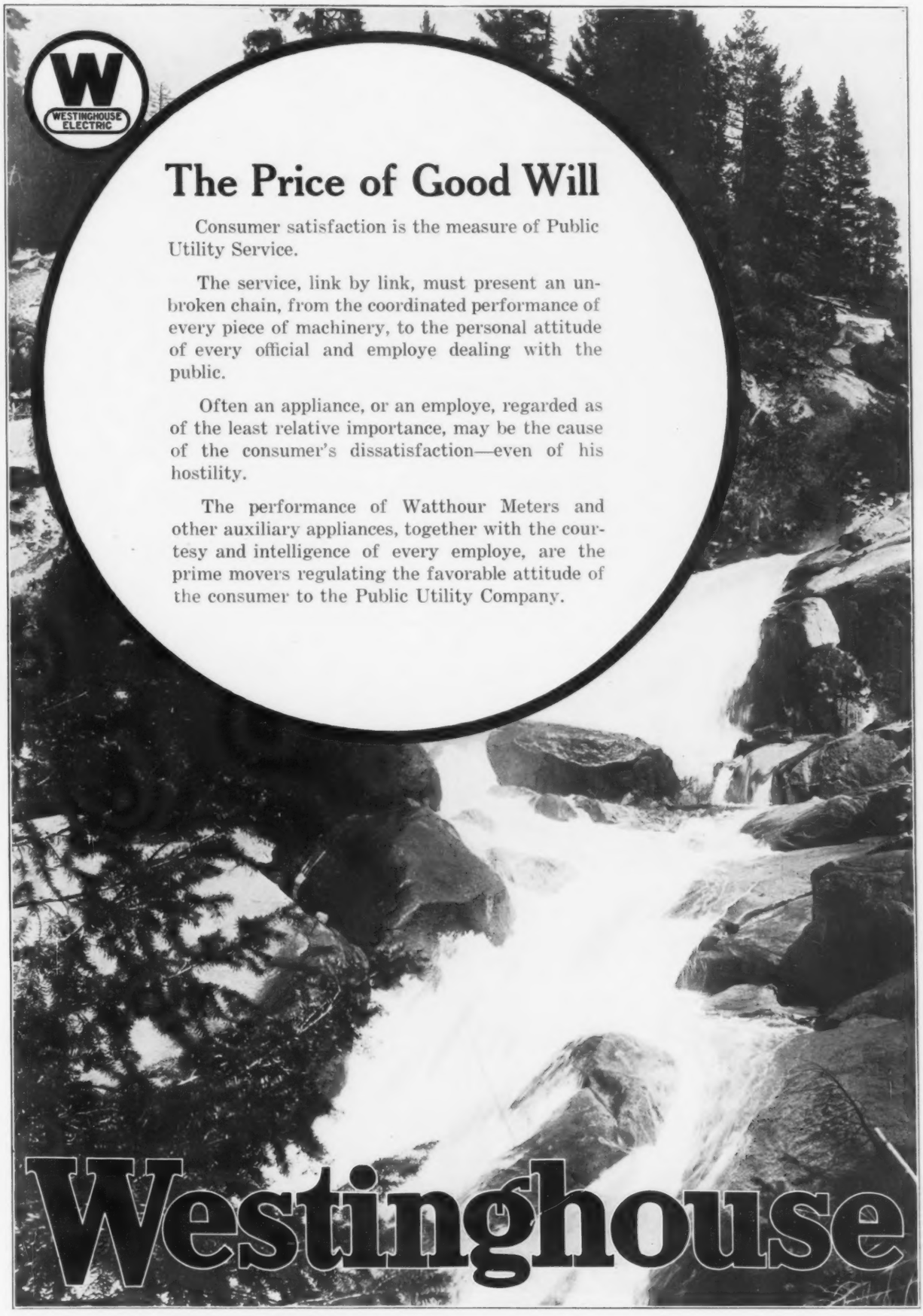
ELECTRIC MATERIAL CO.

589 HOWARD STREET San Francisco

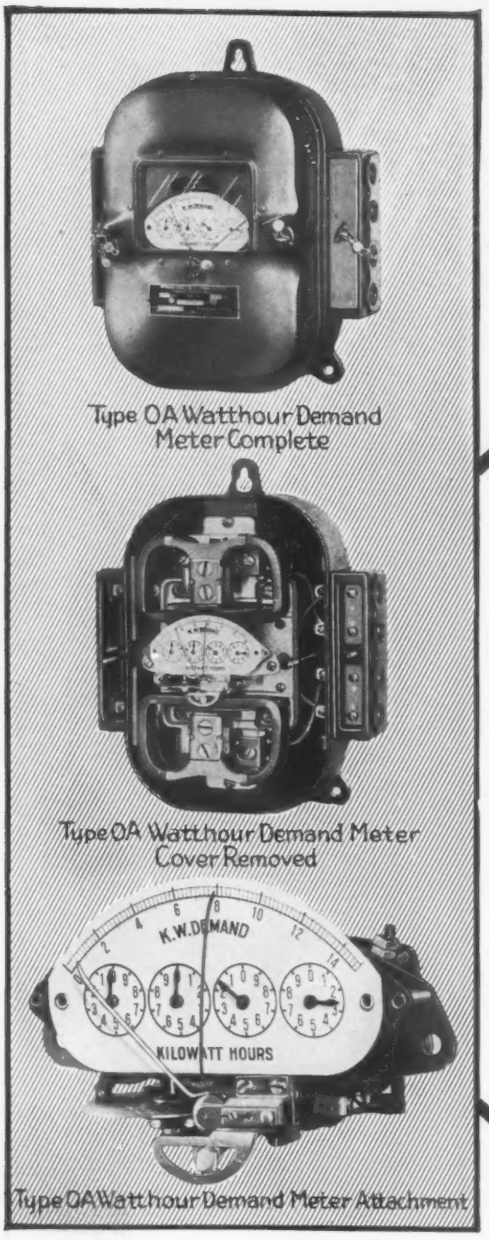
LOS ANGELES
Title Insurance Bldg.

SEATTLE
Hinckley Bldg.

Agent for Ward Leonard Electric Company
Mount Vernon, New York


WESTINGHOUSE ELECTRIC
The Price of Good Will
Consumer satisfaction is the measure of Public Utility Service.
The service, link by link, must present an unbroken chain, from the coordinated performance of every piece of machinery, to the personal attitude of every official and employe dealing with the public.
Often an appliance, or an employe, regarded as of the least relative importance, may be the cause of the consumer's dissatisfaction—even of his hostility.
The performance of Watthour Meters and other auxiliary appliances, together with the courtesy and intelligence of every employe, are the prime movers regulating the favorable attitude of the consumer to the Public Utility Company.
Westinghouse

Know the Character of Your Power Loads



Type OA Watthour Demand Meter Complete

Type OA Watthour Demand Meter Cover Removed

Type OA Watthour Demand Meter Attachment

The Westinghouse Demand Attachment For Type OA Watthour Meters

Because the central station power load constitutes about 70% of the entire load, an analysis of such power demand should be regarded as imperative.

To make this analysis it is necessary not only to determine the total of individual consumer consumption, but also the total demand at various periods of consumption.

The Type OA Recording-Demand Watthour Meter records the entire meter operation in addition to the measure of power consumed.

Additional information pertaining to the application and advantage of these instruments may be obtained from the nearest Westinghouse district office.

W WESTINGHOUSE ELECTRIC

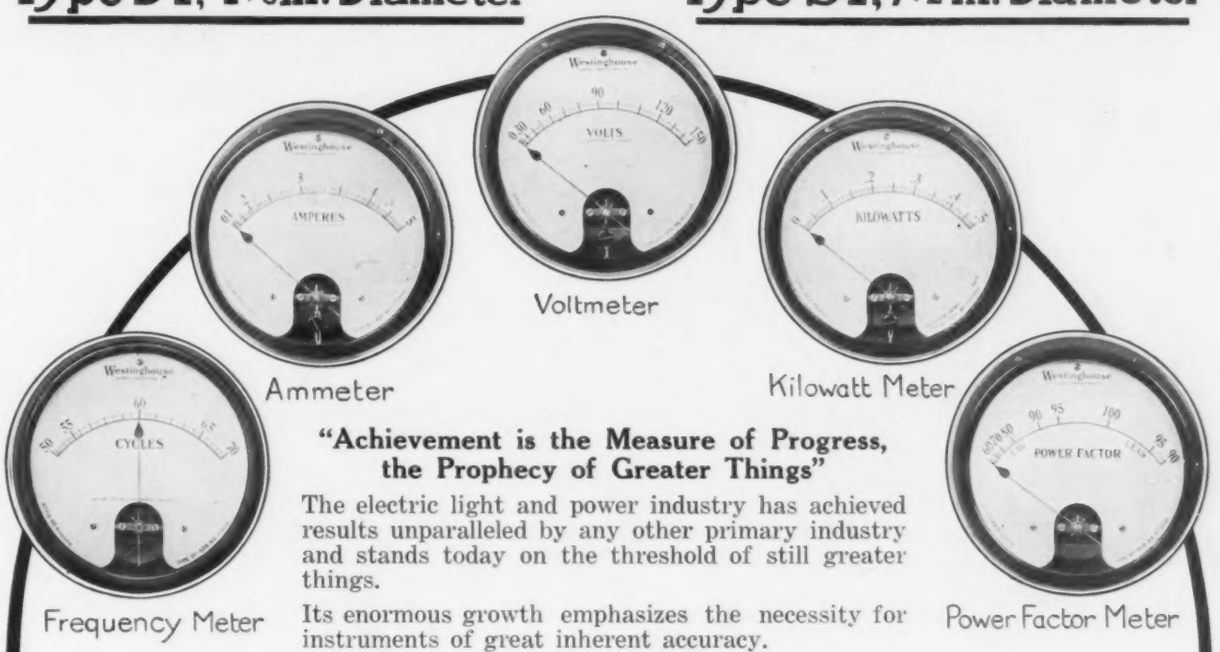
Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.

Westinghouse

ANNOUNCING

A Complete New Line of Ideal Alternating-Current Switchboard Instruments

Type DY, 4⅜ in. Diameter **Type SY, 7½ in. Diameter**



"Achievement is the Measure of Progress, the Prophecy of Greater Things"

The electric light and power industry has achieved results unparalleled by any other primary industry and stands today on the threshold of still greater things.

Its enormous growth emphasizes the necessity for instruments of great inherent accuracy.

Westinghouse Type Y Instruments Have the Following Important Advantages:

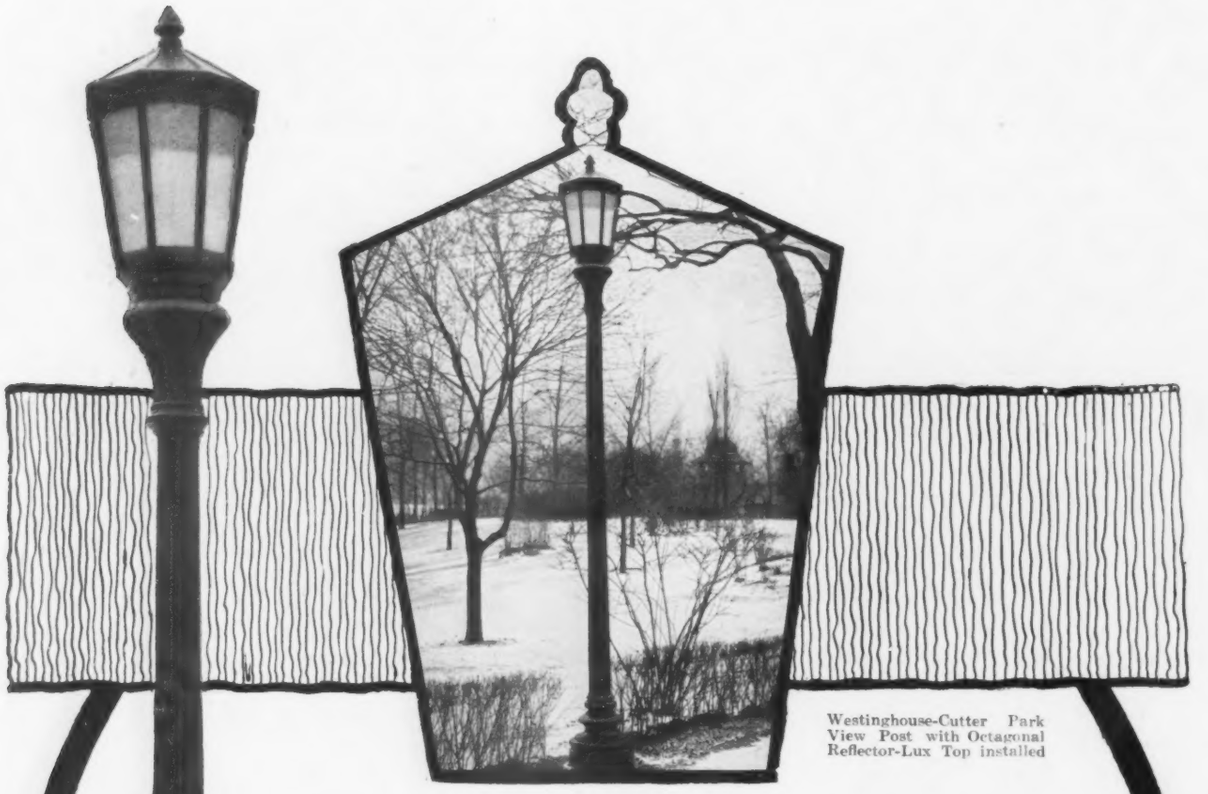
- High accuracy
- Reduced weight of instruments
- Reduced weight of movement in bearings
- Readings practically unaffected by frequency
- Readings practically unaffected by wave form
- Readings practically unaffected by temperature
- Readings practically unaffected by power factor
- Will better withstand vibration
- Will better withstand dampness and climatic conditions
- Waterproof construction, if desired
- Scale divisions widest at important operating loads
- External zero adjuster
- Can be calibrated on direct current

Write for Leaflet 20,045, which gives full particulars

Westinghouse Electric & Manufacturing Co.
Newark Works, Newark, N. J.

W
WESTINGHOUSE ELECTRIC

Westinghouse



Westinghouse-Cutter Park View Post with Octagonal Reflector-Lux Top installed

Add Beauty to the Park

Adequate lighting is of prime importance in problems attending park illumination. The proper choice of design for ornamental lamp posts and tops, to carry out the idea of beauty and harmony, is the consideration next in importance.

The unobtrusive beauty and high efficiency of Westinghouse-Cutter Ornamental Posts, equipped with Westinghouse Mazda Lamps, form the outstanding features of the installation shown on this page.

Expertness in illuminating engineering is necessary, for the best results. Trained illuminating engineers, found in very Westinghouse district office, are at the service of any municipality considering problems of outdoor illumination.

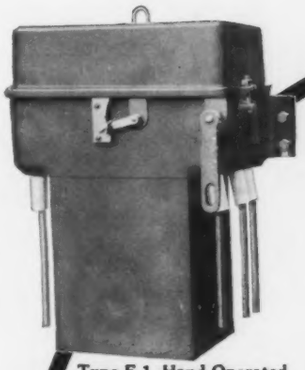
Westinghouse Electric & Manufacturing Co.
George Cutter Works, South Bend, Ind.

W
WESTINGHOUSE ELECTRIC

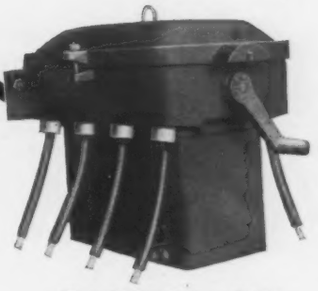
Westinghouse

Types D and F Oil Circuit-Breakers

For Outdoor Service



Type F-1, Hand-Operated, Automatic Series Trip, with Inverse-Time Element, Three-Pole, Single-Throw 200 Ampere, 4500 Volts.



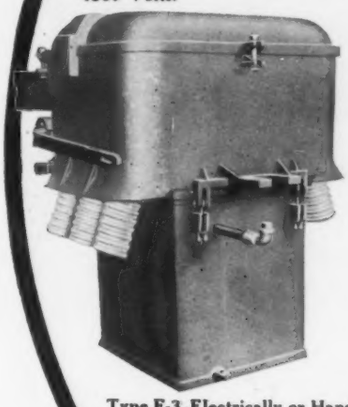
Type D, For Pole or Wall Mounting, 300 Amperes, 4500 Volts, Four-Pole, Single-Throw.

Manually, Electrically-Operated—Automatic and Non-Automatic. Single, Double-Throw.

The Distinctive Features of Type D Outdoor Oil Breakers are: The knife-blade contacts submerged in oil and protected by auxiliary arcing contacts; all live parts carried on insulating supports, affording a high degree of permanent insulation between adjacent poles and between the frame and live parts; all parts supported on a single frame which is easily mounted on a panel, wall, pipeframe, post, bracket, or other vertical support; and enclosure of all live metal parts.

The Prominent Feature of Type F Outdoor Oil Breakers is the finger-type of stationary contact.

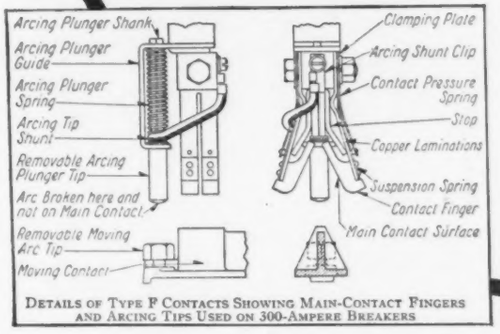
The fingers, being flexibly mounted, are self-aligning and exert a high pressure by means of a separate stiff, steel spring.



Type F-3, Electrically or Hand Operated, Wall or Pipe Mounting, Three-Pole, Single-Throw 600 Amperes, 7500 Volt.

Initial contact pressure is obtained by keeping the fingers separated under pressure by a stop, which also assures the moving-contact wedge entering between the fingers when closing. This follows the well-known principle of the controller finger.

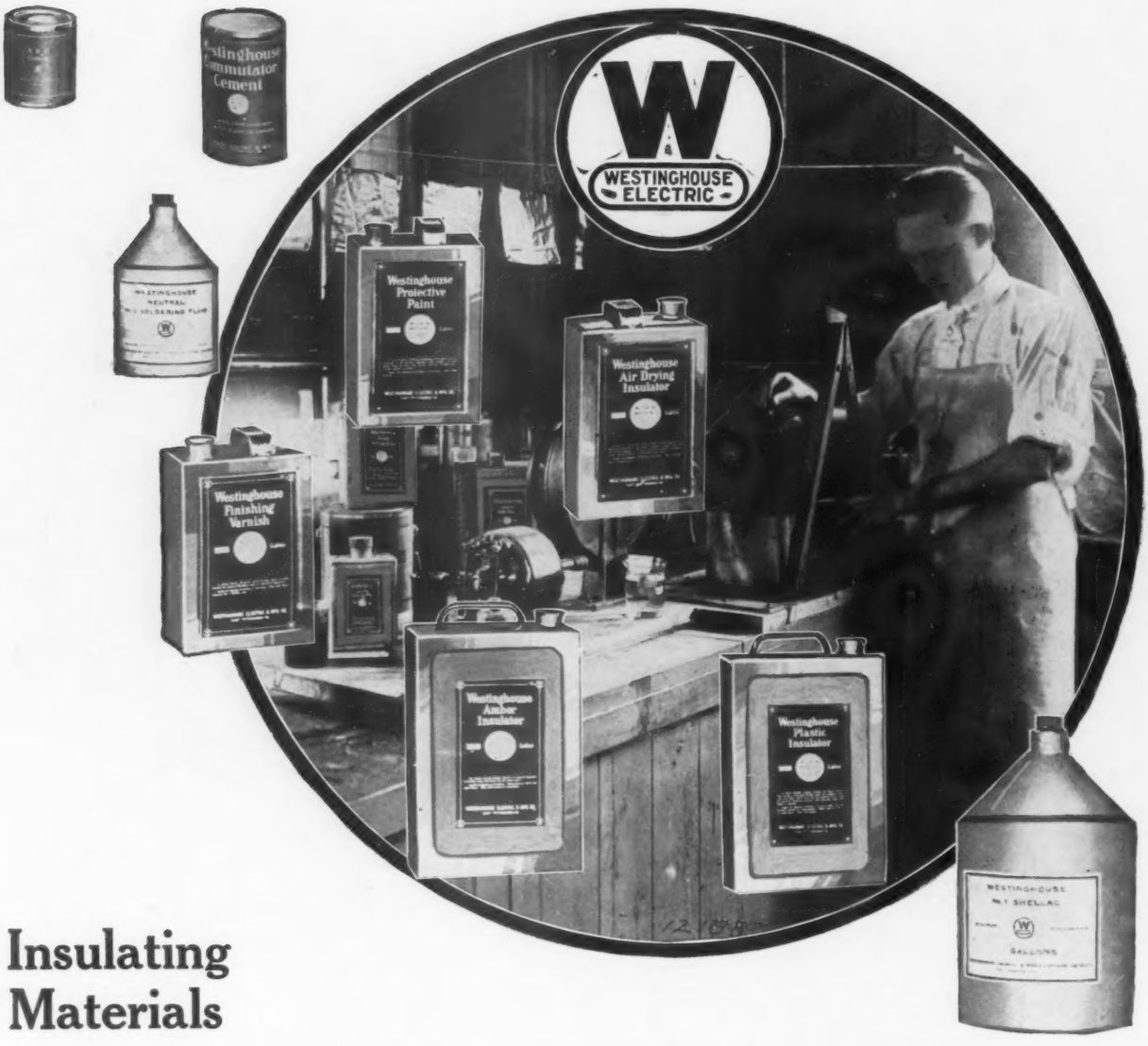
The fingers are protected against arcing by a separate spring-operated, butt-type arcing tip.



DETAILS OF TYPE F CONTACTS SHOWING MAIN-CONTACT FINGERS AND ARCING TIPS USED ON 300-AMPERE BREAKERS

Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.

Westinghouse



Insulating Materials

These insulating materials applied to Westinghouse products have, under the most severe and exacting tests, met every requirement successfully.

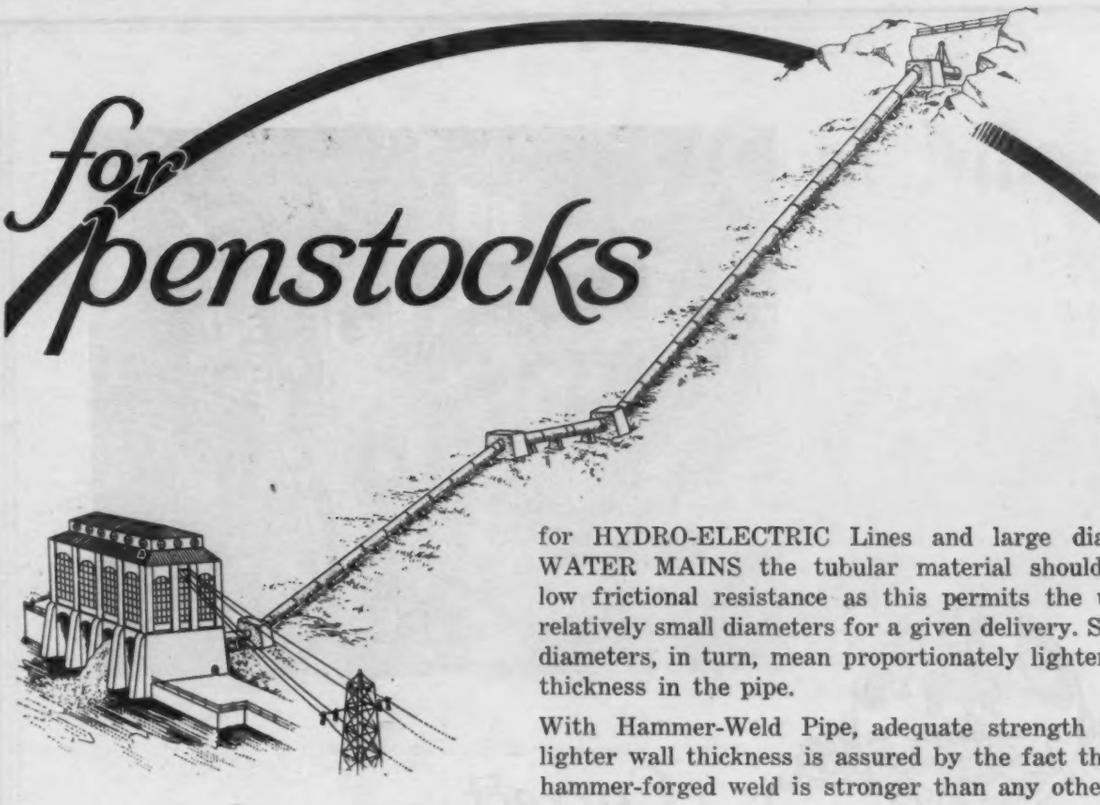
This same quality in insulating material which has served Westinghouse equipment so conspicuously, is available to the trade in handy containers or in bulk. Commutator cement, Amber Insulator, Air Drying Insulator, Plastic Insulator, Protective Paint, and Shellac, are some of the leaders in this complete line of insulating products.

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pa.

Butte, 52 East Broadway
Denver, 910 Fifteenth St.
El Paso, Mills Building
Fresno, Griffith-McKenzie Bldg.
Los Angeles, 420 S. San Pedro St.
Portland, Porter Bldg.
Salt Lake City, 2nd South and Main Sts.
San Francisco, 1 Montgomery St.
Seattle, 3451 E. Marginal Way
Spokane, 821 Old National Bank Bldg.
Tacoma, 615 Rust Bldg.
Tucson, Immigration Bldg.

Westinghouse

for penstocks



for HYDRO-ELECTRIC Lines and large diameter WATER MAINS the tubular material should offer low frictional resistance as this permits the use of relatively small diameters for a given delivery. Smaller diameters, in turn, mean proportionately lighter wall-thickness in the pipe.

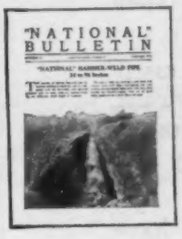
With Hammer-Weld Pipe, adequate strength in the lighter wall thickness is assured by the fact that the hammer-forged weld is stronger than any other kind of weld.

These advantages, combined, result in a considerable saving in weight.

Since the weight of pipe is the basis of cost, the economy of pipe possessing these advantages is clearly important.

"NATIONAL" HAMMER-WELD PIPE is unsurpassed in its adaptability for Penstock, Hydro-electric and Water Line installations. This holds true whether the chief consideration is economy in material and installation costs, durability, or dependability.

Sizes: 20 to 96 Inches
Wall Thicknesses: ¼ to 1½ Inches
Various Types of Joints

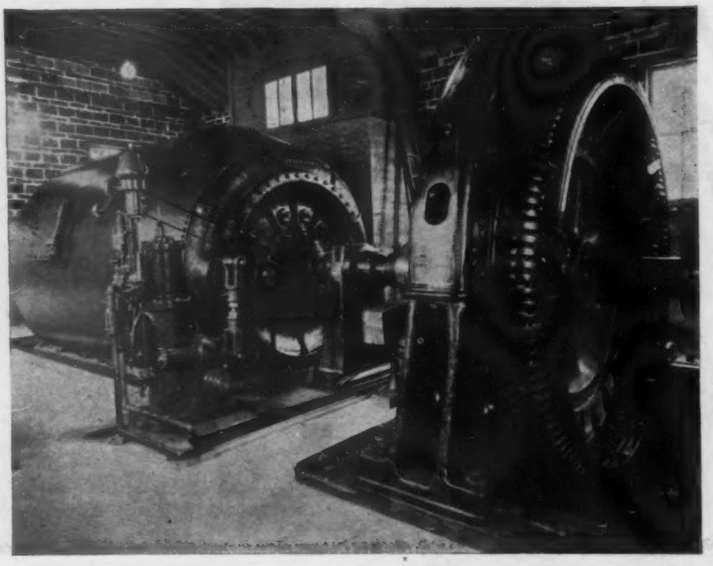


Ask for This

BULLETIN No. 13—which contains a complete description of manufacture, service and installation advantages.

"NATIONAL" HAMMER-WELD PIPE

NATIONAL TUBE COMPANY
Frick Building, Pittsburgh, Pa.
DISTRICT SALES OFFICES IN THE LARGER CITIES



CALOL BRAND
LUBRICATING OILS
STANDARD OIL COMPANY

DEMAND
A CALOL BRAND

For Internal Lubrication of Steam Cylinders

Calol Cylinder Oils
Calol Valve Oil
Calol H. P. Cylinder Oil

For High Speed Service and Exacting Conditions

Calol Engine Oil
Calol Dynamo & Motor Oil

For the Exacting Service of Steam Turbines

Calol Turbine Oil
Calol Turbine Oil Heavy

For Bearing Lubrication of Engines and Shafting under all conditions of Speed, Temperature, Size and Type of Application

Calol Engine Oil
Calol Red Engine Oil
Calol Heavy Red Engine Oil
Calol Heavy Red Journal Oil

Correct Turbine Lubrication

Correct Lubrication of your turbine equipment will reduce your shut-downs, repair accounts and replacements.

The quick separation from water, essential in a hydro or steam turbine lubricant, and resistance to emulsification, are uniformly possessed by CALOL Turbine Oils. They may be filtered and used continuously.

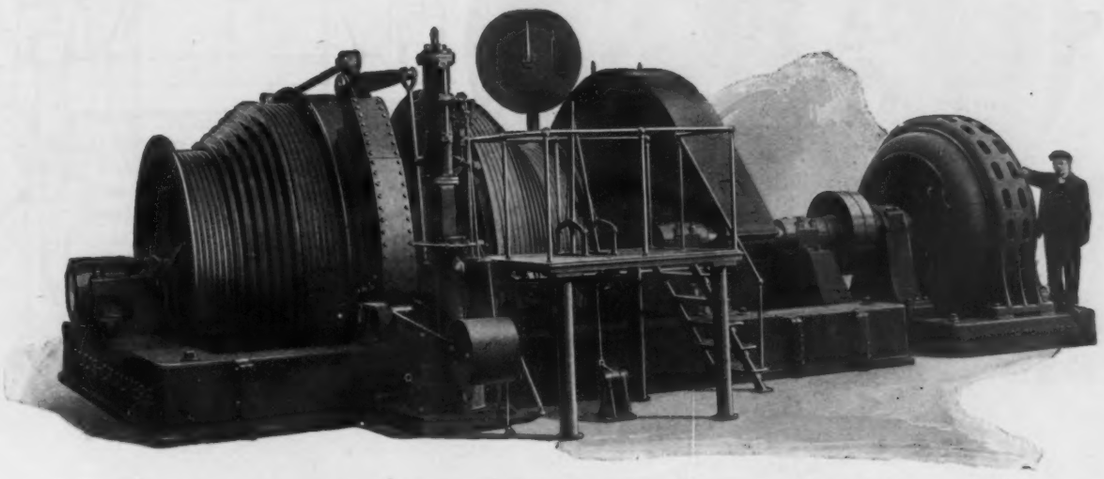
Again and again these lubricants have proven their ability to reduce maintenance costs, and to increase the percentage of turbine operating hours.

We make prompt deliveries of these lubricants from branch stations near you.

Our Board of Lubrication Engineers has a field member ready to demonstrate Correct Lubrication in your plant.

STANDARD OIL COMPANY
(California)

Skip Hoists for Coal Mines



Cylindro-conical double drum, single reduction geared Electric Hoist

Built for

STANDARD OIL COMPANY
CARLINVILLE, ILLINOIS

Rope Pull 46,000 Pounds
Rope Speed 900 Feet Per Minute
Load 12 Tons Coal Per Trip
72 Trips Per Hour
Cycle of Operation 48 Seconds

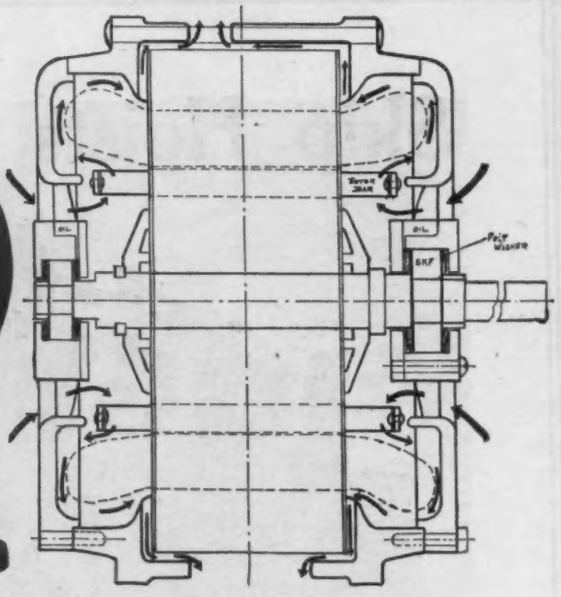
The largest Induction Motor Driven Skip Hoist installed in the Illinois Coal Fields.

The complete unit including Motor and Liquid Type Control Designed and Built by

ALLIS-CHALMERS PRODUCTS
Electrical Machinery
Steam Turbines
Steam Engines
Gas and Oil Engines
Hydraulic Turbines
Crushing and Cement Machinery
Mining Machinery

ALLIS-CHALMERS MANUFACTURING COMPANY
MILWAUKEE, WISCONSIN, U.S.A.
District Offices in All Leading Cities.

ALLIS-CHALMERS PRODUCTS
Flour and Saw Mill Machinery
Power Transmission Machinery
Pumping Engines-Centrifugal Pumps
Steam and Electric Hoists
Air Compressors - Air Brakes
Agricultural Machinery
Condensers



"Best Ventilated . . ."
—and why he said it

That's what the manager of a big motor repair shop said about Valley Motors.

This ventilation is gained by the extension of the copper rotor bars on both sides of the rotor. Air is drawn into the motor through the end plates by the extended rotor bars which act as fans. The cooling air currents are forced over the winding and stator laminations and driven out through vents in the frame.

Good ventilation means low temperature rise. And low temperature rise in a motor prolongs its life.

Valley polyphase motors are made in sizes from ¼ to 40 h. p. Valley single phase motors are made in sizes from 1/6 to 2 h. p.

Write for Bulletin No. 8. It describes all details of Valley design and construction.

Five Salient Points in all Valley Motors

- Valley Short Throw Winding
- Ball Bearings—Dust Proof
- Continuous Full Load 40° C. Motor
- Interlocking Stator Finger End Rings
- Separate and Detachable Base

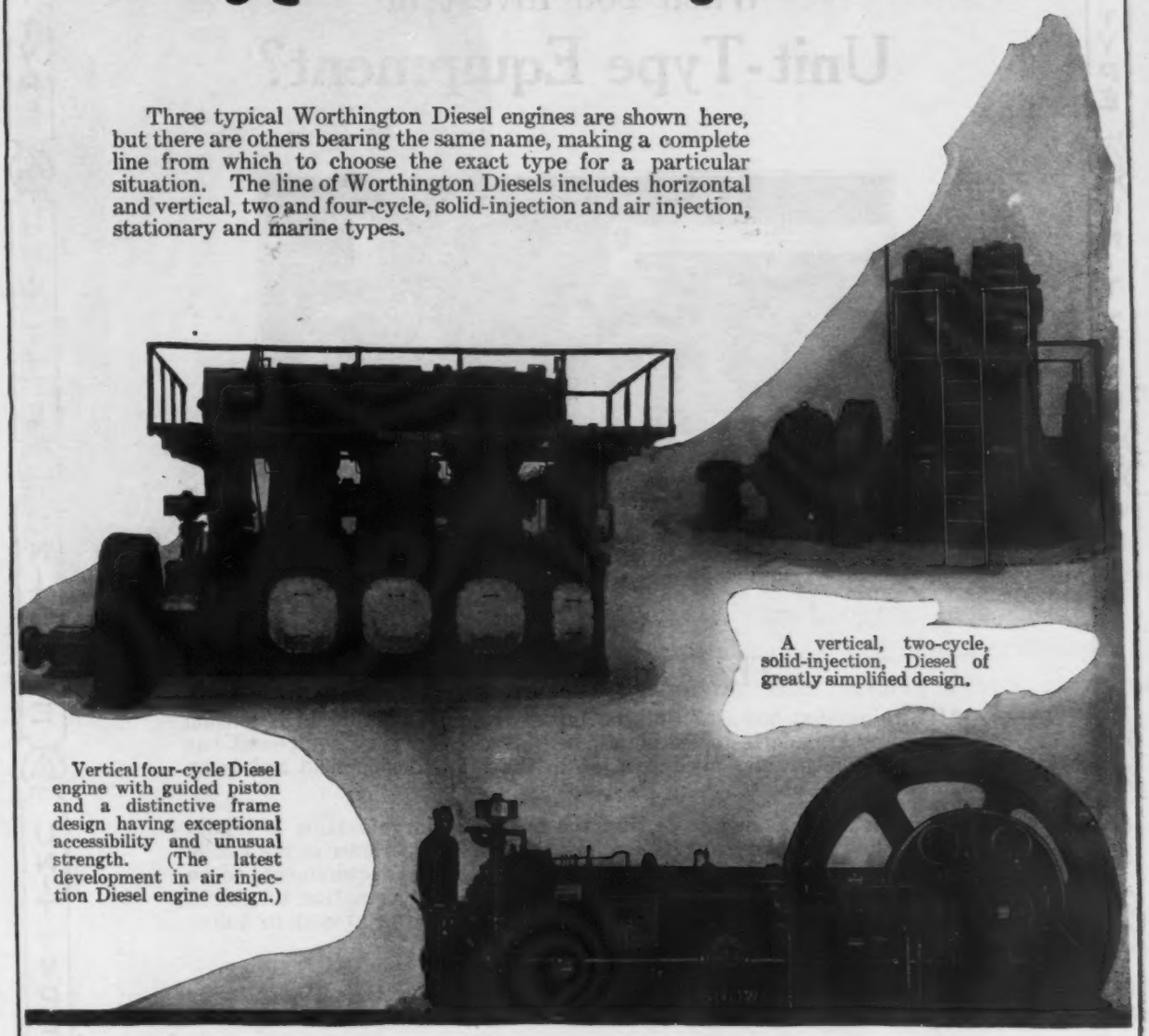
Valley Electric Company

3157 S. Kingshighway, St. Louis, Mo.

Valley Motors

Worthington Diesel Engines
A type for every service

Three typical Worthington Diesel engines are shown here, but there are others bearing the same name, making a complete line from which to choose the exact type for a particular situation. The line of Worthington Diesels includes horizontal and vertical, two and four-cycle, solid-injection and air injection, stationary and marine types.



A vertical, two-cycle, solid-injection, Diesel of greatly simplified design.

Vertical four-cycle Diesel engine with guided piston and a distinctive frame design having exceptional accessibility and unusual strength. (The latest development in air injection Diesel engine design.)

The Worthington-Snow horizontal four-cycle Diesel engine, a massive, sturdy engine for heavy duty.

WORTHINGTON PUMP AND MACHINERY CORPORATION

Executive Offices: 115 Broadway, New York City. Branch Offices in 24 Large Cities W-209.8

WORTHINGTON

Deane Works, *Holyoke, Mass.*
Blake & Knowles Works *East Cambridge, Mass.*
Worthington Works *Harrison, N. J.*
Laidlaw Works, *Cincinnati, Ohio.*
Hazleton Works, *Hazleton, Pa.*
Gas Engine Works, *Cudahy, Wis.*
Power & Mining Works *Cudahy, Wis.*
Snow-Holly Works *Buffalo, N. Y.*
Epping-Carpenter, *Pittsburgh, Pa.*

HIGH TENSION EQUIPMENT

UNIT TYPE UNIT TYPE UNIT TYPE UNIT TYPE UNIT TYPE UNIT TYPE

What Does Your Money Buy
When You Invest in
Unit-Type Equipment?

100,000 Volt Safety Test on a 15,000 Volt Disconnect Switch. When switch is open, insulator on live end will flashover under surge conditions, preventing voltage surge from striking across to the other contact of the switch—real safety.

The Utmost in Value

THE thing that has set "Unitype" apart from every other high tension equipment made is **real design.** Delta-Star "Unitype" equipment has for years held an unassailed position in the high tension field and is an acknowledged standard.

The reason for this success is that the Delta-Star organization is highly specialized, is operated by engineers having a wider experience in the Public Utility business and with first hand knowledge of the requirements to be met. Coupled with this engineering skill is the determination to give a service unexcelled and to market equipment giving the utmost in value.

You Better Buy, *The Better Buy*—Delta-Star Unit Type

DELTA-STAR ELECTRIC CO., 2433-61 Fulton Street, Chicago, Illinois

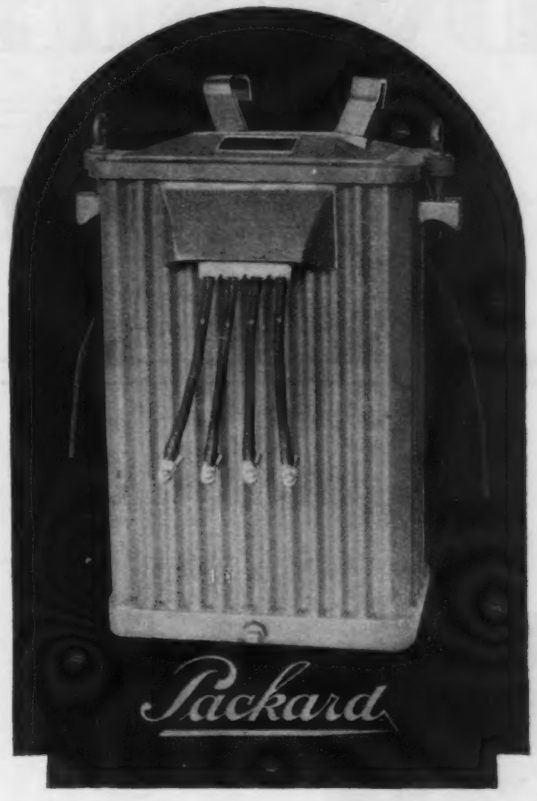
Manufacturers of High-Tension Equipment

LOS ANGELES	SALT LAKE CITY	SEATTLE
W. W. Kirk, 212 I. W. Hellman Bldg.	L. Brandenburger, 419 Dooly Bldg.	W. R. Hendrey Hoge Bldg.

DELTA-STAR

The Standard of Comparison

UNIT TYPE INTERCHANGEABLE PARTS



SPORT MODELS

This term "Sport Models" applied to automobiles, has become a current term signifying those types of cars, especially designed and equipped to accomplish greater speed, power endurance, something decidedly out of the ordinary. In applying this term to a new group of Packard Transformers, we wish to convey the idea of something a little finer, a little more adaptable, a little above the ordinary view of transformers. The unusual appearance of their distinctive cases, painted a battleship gray, is significant of an inner distinctiveness, embodying all that has made the name Packard a synonym for Transformer excellence.

A. S. Lindstrom
111 New Montgomery St.,
San Francisco

Burton R. Stare
619 Fourth Ave.,
Seattle

J. D. Smith
451 E. Third St.,
Los Angeles

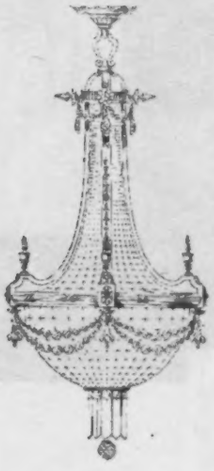
THE PACKARD ELECTRIC COMPANY, WARREN OHIO

The EDWIN F. GUTH CO.

DESIGNERS-

Lighting

The Guth hall mark, identifying each product of the Edwin F. Guth Company, stands for the highest integrity of quality and workmanship.



GUTH COMPANY

ENGINEERS - MANUFACTURERS

Equipment

Every Type and Style of Lighting Fixture

—all bearing the hall mark of Guth Quality so well known in Brascolite

The creative resources and manufacturing facilities of the new Guth organization—resulting from the recent amalgamation of the St. Louis Brass Manufacturing Company and the Brascolite Company—are unexcelled. They represent years of scientific study and research and more than twenty-one years' experience in building fixtures for every type of architecture and for every illuminating purpose.

In addition to standard types, each a leader in its field, we are prepared to make any style or design of fixture that may be desired to meet any special or decorative requirement and our designing and engineering departments are at your service at any time—and without obligation—for such special work.

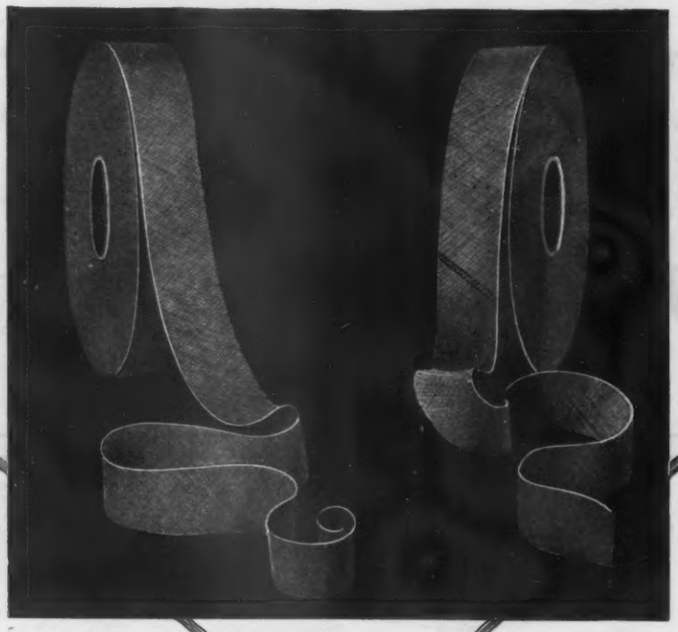
Descriptive booklets showing the complete standard line will be gladly sent upon request.

THE EDWIN F. GUTH COMPANY

Formerly the St. Louis Brass Mfg. Co. and the Brascolite Company

BRANCH OFFICES: (*Sales and Service*)

Atlanta Boston Chicago Cincinnati Detroit Los Angeles Minneapolis
New Orleans New York Omaha Philadelphia Seattle



COMPARE THESE TWO TAPES!

IRVINGTON SEAMLESS BIAS TAPE

Irvington Seamless Bias Tape is the better because every inch is effective insulation of uniform thickness. It gives you a direct gain in productive labor. It makes smooth windings, and it can be applied with taping machines. There is a minimum of air pockets and a minimum requirement of impregnating varnish.

Furnished in Yellow and Black .007 in. to .015 in. thick, ½ in. to 36 in. wide, on paper cores ⅜ or 1½ in. hole, standard length rolls, 72 yards.

What is lost in a 72 yard roll?

With the old type sewed bias tape, there is a loss of 63 inches of material by seam cut-outs; a loss of fifteen minutes productive labor; sixty three open or lumpy splices in the windings; maximum chance for air pockets or loose windings and a maximum requirement of insulating varnish.

Try a small trial order and you will be sure to re-order.

Write nearest distributor.

IRVINGTON VARNISH & INSULATOR CO.

Irvington, New Jersey.

Established 1905

Sales Representatives:

Mitchell-Rand Mfg. Co., New York
T. C. White Electric Supply Co., St. Louis
E. M. Wolcott, Rochester
L. L. Fleig & Co., Chicago
Consumers Rubber Co., Cleveland
Clapp & Lamoree, Los Angeles
F. G. Scofield, Toronto

Seven factors of Quality

High Dielectric Strength
High Resistance
Flexibility
Non Hygroscopic
Heat Resisting
Chemically Neutral
Maximum Elasticity

Sell the Plug that Suits the Need

LOCALET
No. 77

BENJAMIN
Localet
Two ·77· Way

An unusually good-looking, wonderfully useful member of the Benjamin Two-Way family.

Because of its indestructible features it is particularly recommended for use in laundries, around damp or wet places, in connection with motor-driven appliances—any place where a very sturdy two-way is needed.

Made of molded Bakelite, with thread for shade holder on lamp socket. The lamp hangs straight down.

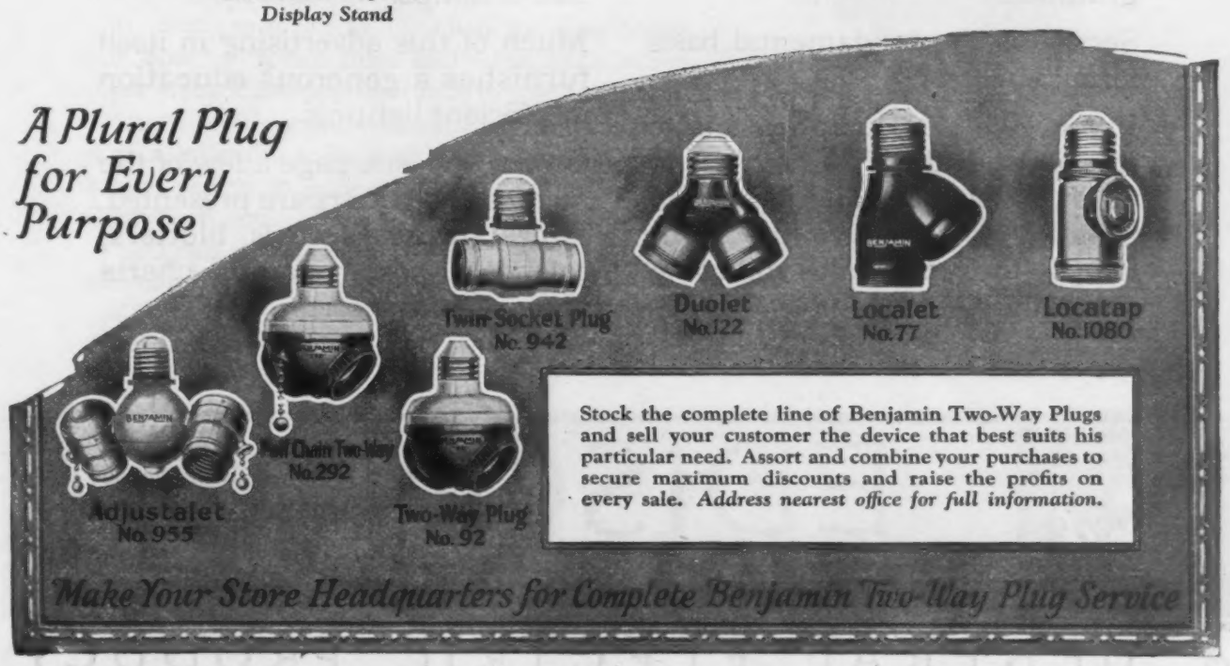
A swivel plug end permits the appliance socket to be turned to the position most convenient for leading away the cord.

With every 10 of these two-way plugs there is a silent salesman that automatically attracts trade, serves your customers and piles up a nice profit for you. Ask our nearest office all about it.

The Localet Dispenser-Display Stand

BENJAMIN ELECTRIC MFG. CO.
847 W. Jackson Blvd., Chicago
247 W. 17th Street, New York
580 Howard Street, San Francisco
Toronto and London

A Plural Plug for Every Purpose



Stock the complete line of Benjamin Two-Way Plugs and sell your customer the device that best suits his particular need. Assort and combine your purchases to secure maximum discounts and raise the profits on every sale. *Address nearest office for full information.*

Make Your Store Headquarters for Complete Benjamin Two-Way Plug Service

"That electrical man certainly did us a great service!"

"SINCE he showed us how to *use* electricity properly, we get 100% more real satisfaction from our lighting. Let's not forget to buy from him when we need anything electrical—he deserves our gratitude."

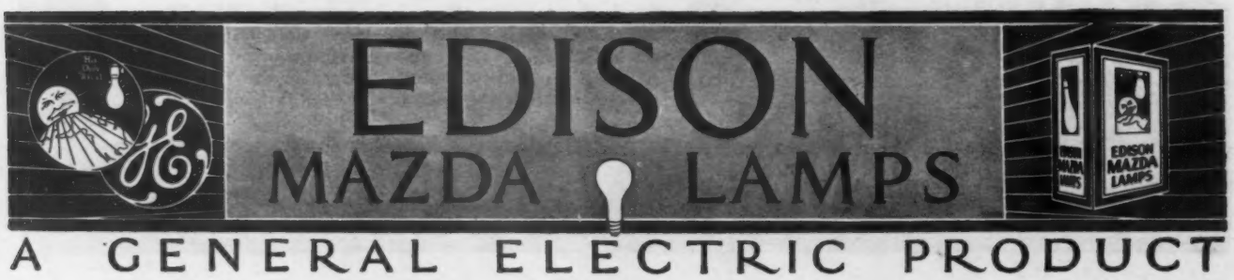
Service is the fundamental basis for all success.

If you educate your prospects to the fact that there's a *right* lamp for every purpose, and if you *tell* them that you have the right lamps—the repeat sales will come naturally.

Edison MAZDA lamp advertising material, a wealth of which is available for your use, is designed to help you tell the user of electricity how to have better light at less cost, and to show the proper use of lamps.

Much of this advertising in itself furnishes a generous education in efficient lighting.

On the opposite page a few of the many sales-getters are presented. There are also letters, blotters, calendars, poster stamps, charts and package inserts.



A GENERAL ELECTRIC PRODUCT

For instance—
The "Lighting Primer"

This is *your* book.

Of course it mentions Edison MAZDA Lamps occasionally, but not enough to prevent its being distinctly your own—imprinted with your name.

It points out the evils of glare, shadows, or insufficient light.

It tells how the *right lamps* will improve light from present fixtures, and how little it costs to have the most modern types of fixtures, additional outlets, etc.

It instructs what to do when the fuse blows out, how to replace fuses and what to do when other electrical equipment fails to work properly.

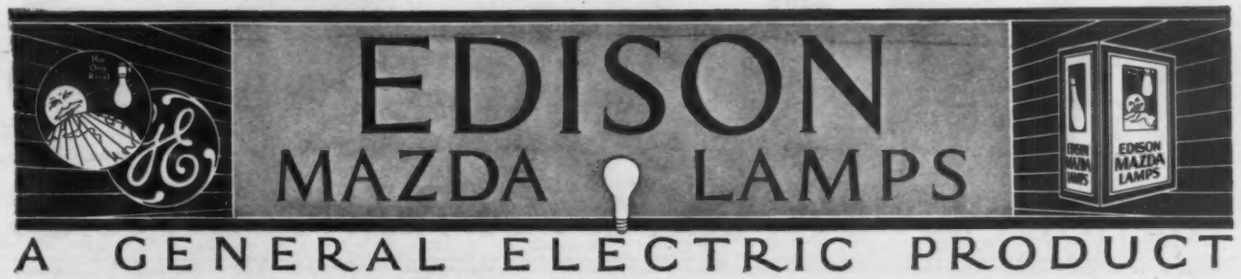
Used in conjunction with the "Lighting Dozen," it is a sure-fire sales multiplier. The "Dozen" brings people to you—and the "Primer" keeps them with you.

You can get these valuable things by communicating with the nearest district office.

EDISON LAMP WORKS OF GENERAL ELECTRIC COMPANY, HARRISON, N.J.

The Lighting Dozen. Twelve separate 3-panel displays, each with a different sales-creating message, not only for Edison MAZDA Lamps, but for *all* electrical merchandise.

This counter display stand, with testing socket, shows and demonstrates every type of lamp you carry. Separate tumbler switches permit the customers to turn on individual lamps. The stand is made of metal, lithographed in ten colors. It is two feet high.



The Shallow Line of Flush Receptacles supplements the Shallow Line of H & H Push Button and Tumbler Switches—completely providing for thin partition wiring.

H&H

complete offering of

CONVENIENCE OUTLETS

T-SLOT-SHALLOW-TYPE

Composition and Porcelain

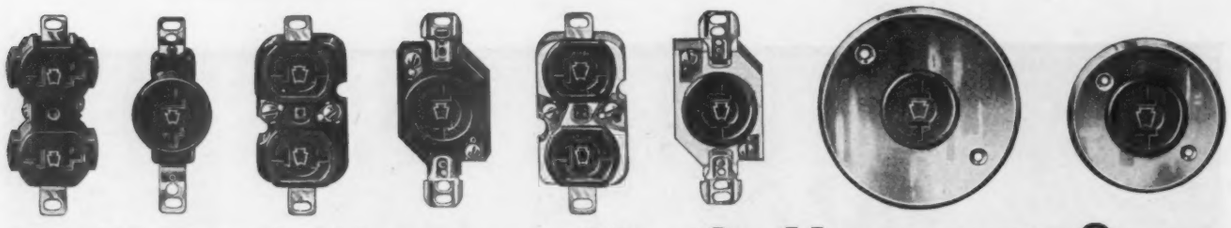
WHAT H & H stands for in switches and other devices, now appears in the complete line of Flush Receptacles: T-slot, shallow type, in composition and porcelain.

The line provides every essential style, and that essential quality of H & H *permanence in the service.*

Side-wired composition, duplex and single: Nos. 1494 and 1493 respectively. Standard-size composition, duplex and single: Nos. 1437 and 1435 respectively. Standard-size porcelain, duplex and single: Nos. 1482 and 1430, respectively. Round porcelain with 3¼" plate, No. 1455. Round porcelain with 2¾" plate, No. 1454.

Not much in clever mechanism can enter into a convenience outlet; yet the opportunity is there for neat design, rugged contacts, perfect finishing. *THERE* was the H & H opportunity. There, too, is the *electrician's*—in selecting his outlets for all requirements from

"The Line of Least Resistance"



THE HART & HEGEMAN MFG. CO. HARTFORD, CONN.

Nothing to do with the League of Nations

A higher court has written the name Nichrome across the two continents, and into the archives of electric heat *reality*—

—the court in which the public holds the balance of power and is the final judge.

And that judgment is always governed by results.

If you want to be *sure* of favorable reaction from every electric heating appliance you sell, be sure that the heating element is made of Nichrome—the resistance wire that is made only by

DRIVER-HARRIS COMPANY
HARRISON, NEW JERSEY
Chicago • Detroit • Canada • England • France

ANDERSON

Catalog No. 2154
150 ampere Receptacle with vehicle mounting, double pole, with auxiliary third contact for meter connection.

Catalog No. 1953
150 ampere, double pole plug.

Charging Plugs and Receptacles

are backed by eighteen years of practical experience. That is why Anderson Plugs and Receptacles represent the last word in durability and dependability and are particularly adapted for use as connectors to all kinds of portable electric apparatus. The results of years of experience are built into every one manufactured. And the line is complete.

Nearly all of the large railways systems, many central stations and manufacturers of electric vehicles and trucks have adopted them as standard and they are ready at any time to testify as to their quality.

This selection was made because these products have conclusively demonstrated that they meet every requirement under all conditions of heavy demand.

They have proven, by actual service, to be strong, trustworthy and efficient over long periods of time. And time is the supreme test.

Let us tell you where you can see some of our equipment in use.

TRADE A MARK
Reg U.S. Pat Office

Albert & J. M. Anderson Manufacturing Co.
Established 1877
291 A St., Boston, Mass.

Branches—New York, 135 Broadway. Philadelphia, 429 Real Estate Trust Bldg. Chicago, 105 So. Dearborn St. London, 38-39 Upper Thames Street, E. C. 4.

Contractor-Dealer Number

August 1

This issue of the Journal of Electricity will emphasize particularly the contracting and the merchandising phases of the electrical industry in the West.

The editorial articles to be featured in this number will include

(a) "Resume of the Credit Situation Existing Between Contractor-Dealer and the Jobber," containing recommendations as to how it may be improved—by Rey E. Chatfield, secretary-manager, Electrical Service League of British Columbia.

(b) "Application of Principles of Better Merchandising for Increasing Sales"—by Arthur L. Spring, merchandising manager of Los Angeles office of the General Electric Company and formerly field representative of California Cooperative Campaign. Mr. Spring is an authority on merchandising problems.

(c) "The Accounting Problems of the Contractor-Dealer"—by F. V. Mitchell, an accountant specializing on contractor-dealer problems.

(d) "What the Finance Company Can Do for the Contractor-Dealer"—by Wilbur Fritz, president of the Republic Finance Company of San Francisco. Mr. Fritz has developed a series of very interesting facts which every electrical dealer should know.

(e) "Electrical Construction"—by Earl Browne, retiring president of California State Association of Electrical Contractors and Dealers and a member of the firm, Browne and Langlais Electrical Construction Company, electrical contractors of San Francisco.

(f) "Who Shall Write the Electrical Specifications"—by T. L. Nudd, formerly electrical engineer with the F. E. Newbery Company of Los Angeles, at present consulting electrical engineer for the Associated Architects of Los Angeles. This article will deal with the various functions of each branch of the electrical industry in connection with construction jobs of different classes.

Directory of Electrical Manufacturers and Their Western Representatives

In this issue will also be published a cross-indexed list of Electrical Manufacturers and their Western Representatives. This directory has been a very valuable asset to Western Buyers in the past. This issue will contain all changes to date and will therefore be retained as a reference number for the next six months.

A Valuable New Feature

will be the publication of a directory of electrical washing machines. This will not only give in tabulated form catalog information regarding the different machines, but in addition will show who here in the West is selling the equipment and also where repair parts can be obtained. Never before has such a list been developed and we feel certain it should be invaluable to the reader as well as the manufacturer and his distributors.

It would be difficult to assemble at one time a more valuable set of interesting and instructive information for the electrical contractor and dealer. This issue will be well worth preserving for later reference.

For the Electrical Manufacturer

there is presented in this issue a most unusual opportunity to most effectually tie-in your sales story in a special number which is chock-full of information of particular interest to a selected audience of Western Buyers whom you want to reach.

Forms close July 23, 1923.

Journal of Electricity

Rialto Building San Francisco

Announcing A New Service

As a corollary to our semi-annual listing of electrical manufacturers and their Western representatives, we plan to inaugurate an additional service for our readers and friends.

This service will consist of the publication of a series of directories, it being the plan to confine one subject to each issue, commencing July 15.

Each directory listing will be divided into two groups of information:

(a) Catalog information regarding a particular product made by several manufacturers.

(b) A list of the sales or jobbing representatives here in the West and also the location of the nearest point from which repair parts may be secured.

These directory listings, we feel, will be of real service to our readers especially, and incidentally to the manufacturers and their agents and distributors whose names are included.

Therefore, our July 15th issue will contain a

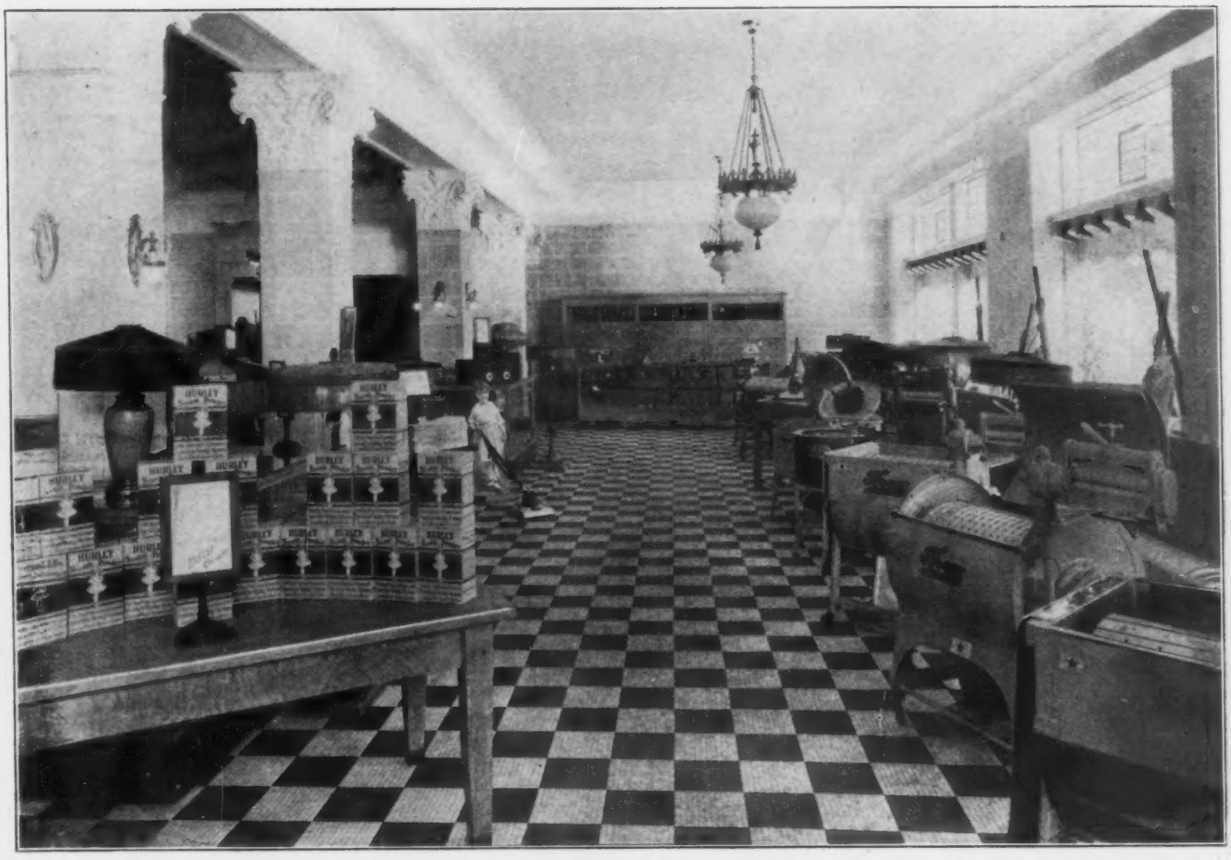
DIRECTORY OF VACUUM CLEANER MANUFACTURERS.

Following this our August 1 issue will contain a Directory of Washing Machine Manufacturers.

And each issue thereafter will treat of a specific product.

Journal of Electricity

Rialto Building San Francisco



The Kansas Gas and Electric Company's Beautiful New Appliance Salesroom at Wichita

THIS progressive central station serves Wichita and a large number of Eastern Kansas communities, maintaining a number of attractive display rooms.

HURLEY Thor Electric Washing Machine

For several years, the Kansas Gas & Electric Company has merchandised Thor products in all of its branches and their efforts have been exceptionally successful.

We are proud to number them among our central station customers.

HURLEY MACHINE COMPANY

Main Works and General Offices:

22nd Street and 54th Avenue, Chicago, Illinois

147 West 42nd St., New York

425 Rialto Bldg., San Francisco, Calif.

ESTD. 1871
Horton
MFG. CO

Extra large, heavy copper tub, beautifully finished. Four steel legs on roller bearing castings. ¼ H.P. Motor with automatic protector. Fully equipped gas burner. Metal frame wringer with safety device. Finest materials and construction used throughout.

This year it's the HORTON

"from San Diego to Idaho"

The Horton is not one of those washers which are merely an adaptation of the old-fashioned wash tub to which power has been added for shaking the clothes around. Instead, it is a simply, but scientifically constructed **machine,** built to cleanse thoroughly, quickly and without injury to any fabric. The Horton does not merely agitate the clothes and water—it WASHES. The greatness of the Horton is in the **service** that it renders.

And that service is gradually but surely making the Horton the washer wanted throughout the length and breadth of the Coast. Dealers find that the Horton is easy to sell and that in actual service in the home, it justifies every claim they make in selling it. The three-cup air-pressure and suction method of washing; the ease of adjustment and operation; the sanitary all-metal construction; the lifetime of service it renders; the spotless whiteness and freshness of linens and other fabrics it washes—all are "talking points" that the Horton embodies. Among the hundred or more different makes of washers, the dealer will do well to study the Horton point by point and compare it.—Then sell it with honest enthusiasm.

The Horton **Home Ironer** is everything that is required in the home. It does all the ironing. It has efficiency, ease of operation, stability and attractive appearance. The Horton is speeding up ironer sales for dealers everywhere. It is making machine ironing just as popular as machine washing.

Write for complete descriptive matter and proposition to dealers.

Horton Manufacturing Company

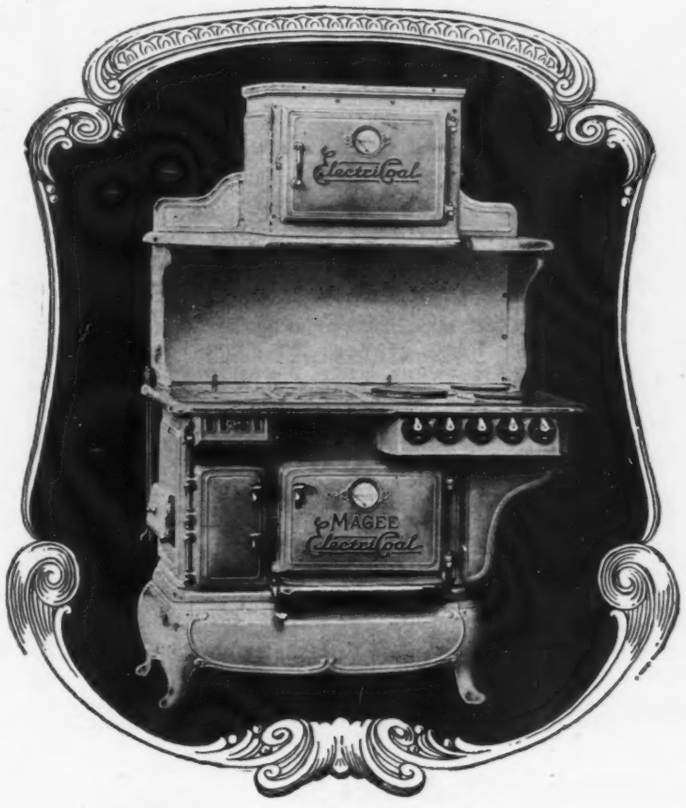
Established 1871 **Fort Wayne, Indiana** Pioneers for 50 yrars

Horton
Home
Ironer

A full open end—30 inch roll—well padded. Adjustable swinging feed board. Handy pressure adjustment. Simple foot control. Highest quality and finish.

MAGEE ElectriCoal

The Range of Double Service ----and it Sells



The Magee ElectriCoal is two complete ranges in one compact form doing full duty both as a coal range and as an Electric Range. Either fuel can be used at the same time or separately as desired.

A complete Electric Range including 3 cooking units, a broiler and a large Electric oven or fireless cooker. The units are made by the Edison Electric Appliance Company, Inc., which mean reliability and service.

A perfect coal range for cooking, baking and heating water, has the large Magee oven which is heated on five sides, and is equipped with all the special Magee improvements.

The Magee ElectriCoal is made in gray enamel (por-cel-a) finish or in ebony black, and is the finest range ever produced.

WHEN you sell a Magee ElectriCoal you make real money for yourself — and a satisfied customer — that will sell another for you.

Write for full information

T. G. ARROWSMITH COMPANY
180 New Montgomery St. San Francisco, California

MAGEE FURNACE COMPANY
38 Union Street, Boston, Mass.

JUDSON C. BURNS, INC.

1108-10 WALNUT ST. PHILADELPHIA, PA.

CAMDEN-TRENTON-WILMINGTON-CHESTER-HARRISBURG & BRANCHES

April 25th, 1923

Haag Bros. Co.
Peoria, Ill.

Gentlemen:-

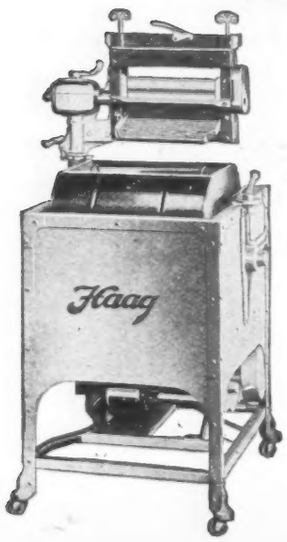
Eight or nine years ago we first began to sell the HAAG line of electric washers. We were greatly impressed with the fact that we had practically no service calls on these washers. During the years our sales increased, until now we are doing a volumne business on the machines. The absence of service is still one of the marked characteristics on the sale of the machines. This has been a great saver of overhead. We have also found the washers wash clothes thoroughly.

Any washer bearing the HAAG nameplate is guaranteed by us unqualifiedly. The name HAAG stands for fine mechanical construction, progressiveness in merchandising, square, honorable and co-operative treatment of dealer and distributor. Our only complaint has been that we have not been able to get enough HAAGS to supply our demands.

Yours very truly,
JUDSON C. BURNS.

JOB/GA

Judson C. Burns



"The Absence of Service"

saves overhead; makes gross profits NET profits and brings customers back to you for other things.

Judson C. Burns, the East's most successful wash machine distributor, and hundreds of others know that in "absence of service" HAAG dominates.

A limited number of exclusive jobber territories are still open. A few dealer sections are yet uncovered.

If interested, write

HAAG BROTHERS COMPANY

The "Complete Line" Manufacturers

PEORIA ILLINOIS

THE NEW CONNECTICUT "A-1" PLUG

"Not cheaper—but better"

Packed in 3 color display cartons. Watch them sell.

Compare it with the plug you considered best

You don't have to talk about this plug—it speaks for itself. Just place it beside any other plug and note the difference. You'll agree that it is the "Rolls-Royce" of attachment plugs.

Brown Bakelite and nickel trimmings make it both durable and attractive. It is much lighter in weight than other plugs, will resist hard knocks and last much longer.

Packed in three-color display carton that we provide, it is easily accessible and will sell on sight. It retails for 25 cents and you get a good profit. Watch your plug sales increase.

THE CONNECTICUT ELECTRIC MFG. CO.

Office and Factory: **Bridgeport, Conn.**

Branch Offices:

New York, Aeolian Bldg. — San Francisco, 74 New Montgomery St. — Chicago, Manhattan Bldg.

APPLIANCE MANUFACTURERS will find that this de luxe plug will make a great improvement in the appearance of their product and also in its selling power. Write now for a sample and you will be convinced of the high quality of this plug.

Connecticut Electric Mfg. Co.,
Bridgeport, Conn.

Enclosed find six cents to cover cost of mailing the "A-1" Plug.

Name.....

Street.....

City.....

Jobber's name.....

Why Five McGraw-Hill Electrical Publications?

TO keep faith with the electrical industry—to secure coverage of the specialized development of the electrical field and its markets—to meet the diversified viewpoints of the men in the electrical industry with specialized information and leadership thinking—

That is why. In short, expansion of coverage to meet the need for such. A complete service to all divisions of the industry.

Nowhere has greater history been written by the keen lance of publishing than across the pages carrying the great story of electricity and the part it plays in the progress of the world—in the development of mankind—in the advancement of industry.

And thus has been created by a process of evolution, the McGraw-Hill Electrical Group; a notable achievement of publishing, backed by the ideal to give, and give to the fullest.

First, *Electrical World*

established in 1874, serving executives and engineers, including those who design, construct, operate, maintain, equip or finance the great plants that generate or use electrical energy for power, light, heat and transportation—

The **key paper** of the industry.

But the tremendous expansion of electrical development made it impossible for one paper, regardless how powerful its influence, to blanket the field and serve all. The task became too great. It became necessary to provide for more coverage; to unlock other doors. From the swelling ranks of those interested in electrical marketing and installation came the cry for specialized thought and attention focused on **their** problems. To keep faith with the industry it served, McGraw-Hill could do no less than heed.

Thus was *Electrical Merchandising* given to industry

This paper was established in 1907 under another name, but in 1916 became the second of the McGraw-Hill Electrical Group that was soon to expand still further. Through Electrical Merchandising, specialized contact was secured with the men who sell, manage or finance electrical appliances or service.

Electrical World, that rugged trunk of the industry, had begun to shoot out its branches to the hitherto unsurveyed parts of the field.

But the work was not destined to stop. A third electrical publication soon became necessary.

Out of the Golden West there came a vision typical of the great development taking place on the western fringe of the continent. With

70% of the undeveloped water power lying west of the Rocky Mountains, and the builders of this great Western empire working shoulder to shoulder in the transformation of that wide expanse of partly-cultivated land into a highly electrified and productive section, there came again the cry for individual attention; a closer publication tie-up with the business and industrial life of this section to interpret the thought and activities of these Western men and their organizations.

So again, McGraw-Hill responded.

Journal of Electricity

established in 1887, became in 1919 another McGraw-Hill electrical paper, dedicated to the ideals of service established by the other two, and interpreting the ideals and aspirations of the electrical men of the Pacific Coast.

But the contact with the field was not yet complete.

Resistless in its advancement, insistent that its more clearly defined divisions be better and more specifically served, the electrical industry still called for more complete coverage. Certain important groups of men, bound together by common problems, voiced the need for another McGraw-Hill paper. These were the works managers, superintendents, master mechanics and chief electricians and their assistants responsible for the maintenance and operation of electrical and associated mechanical systems used in all mills and factories. Keen, wide-awake and progressive, these men voiced their cry for their share in the broader service being rendered by McGraw-Hill specialized electrical publications, and in January, 1922, Electrical Review, established in 1882, was taken into the McGraw-Hill family and became the

Industrial Engineer

But still, the industry has again called for another expansion of McGraw-Hill service.

Gradually, but surely, a change has taken place in the distributing end of the electrical industry, and the number of channels of distribution has been increased. The remarkably increased demand for electrical service and appliances has caused thousands of retailers outside the electrical trade to take on electrical merchandise as side lines. And with this increased demand for electrical service and appliances has come an increase in the number of small electrical contractors. In a short time these newcomers have become an important factor in the electrical distributing field; in the communities in which they transact their business and operate. So firmly have they become an integral part of the electrical industry that no longer could their needs be ignored.

And so

Electrical Retailing

was purchased and is now giving to these men the broadening influence of the strong staff of McGraw-Hill editors focused on their problems.

Thus has coverage of the electrical industry been attained—by the McGraw-Hill Electrical Group. Only by this coverage could McGraw-Hill have kept faith. Acutely sensitive to the needs and changes within the electrical industry, McGraw-Hill has anticipated its publishing duty toward the electrical field and presented to over 85,000 electrical readers the right paper at the right time.

Consider the tremendous buying energy exerted by this great group of specialized publications. Used as a group, these five McGraw-Hill electrical publications offer you a total combined circulation of over 85,000, ready to carry your sales message direct to those who buy or influence buying in central stations, the plains and slopes of the West, behind the retail electrical supply counter and in mill and factory—a complete blanket coverage.

Buy this combined circulation to saturate the electrical industry, or pick the McGraw-Hill electrical publication serving that particular section of the industry in which you may wish to concentrate.

Think of McGraw-Hill electrical publications as a group —use them as such whenever possible

McGraw-Hill Company, Inc., Tenth Avenue at 36th Street, New York City

24 HOUR SERVICE DAILY—SINCE MAY 1921

Illustrated above is a group of ten automatic grinding and polishing machines, used for finishing automobile disc type steel wheels, in the Budd Wheel Co. plant at Philadelphia, Pa. There are twenty-five of these machines in the plant which were installed in May 1921. Each machine is driven by an R & M 15 H.P. polyphase motor.

At the operator's will overloads of 50 to 100% are placed upon the motors for 1 and 2 minute periods, intermittently. The finishing process results in gummy grit which settles on the motors. Yet, aside from a cleaning periodically, these R & M Motors have unfailingly powered the machines 24 hours a day, 7 days a week, for over two years. This is forcible proof of the sturdy construction and reserve capacity of R & M Motors.

To those not employing R & M Motors, the experience of such users will prove interesting. Our nearest branch will be glad to furnish names of R & M users for your investigation.

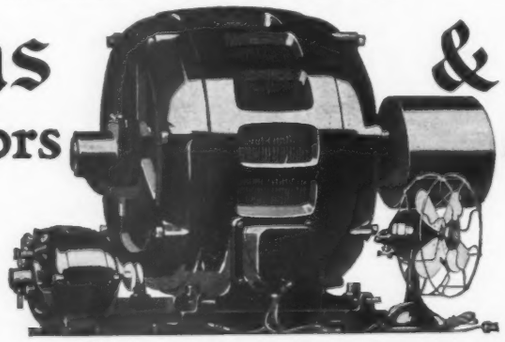
THE ROBBINS & MYERS COMPANY

Springfield, Ohio **Brantford, Ontario**

Branch Offices: New York, 30 Church St., Chicago, 1444 Conway Bldg., Philadelphia, 1418 Walnut St., Cleveland, 1239 W. Third St., St. Louis, 1522 Chemical Bldg., San Francisco, 701 Rialto Bldg., Cincinnati, 9 E. Third St., Buffalo, 827 Ellicott Sq. Bldg., Boston, 74 Pearl St., Charlotte, N. C., 217 Latonia Bldg.

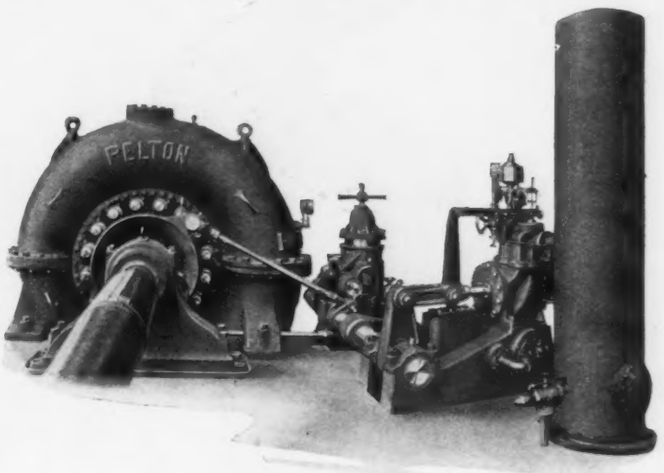
Robbins & Myers

Motors *and Fans*



PELTON

Around the World With Pelton



CHAPTER VI.

CHILE

Chile possesses abundant potential waterpower, and the limited local supply of fuel makes its development of particular importance to the welfare of the entire nation. There are a number of important Pelton installations, the largest being the Maitenes plant, part of whose output supplies the pioneer railroad electrification in the country, comprising 144 miles of heavy traffic line between Valparaiso and Santiago.

The plant comprises three Pelton turbines, each with a maximum capacity of 11,500 HP. under a head of 600 feet. A shop assembly of one of these turbines is shown above. They are typical of the large capacity horizontal single overhung reaction turbine as developed by the Pelton Company, and are among the highest-head units of this type.

Among the advantages of this type of construction is the ease with which access may be obtained to the runner by simply removing the draft elbow, without dismantling either generator, shaft, or bearings. The saving in time and labor when replacing worn parts is particularly important for installations using silt-laden water.

Hydraulic balance of the runner is obtained by providing wearing rings at a point as close to the shaft axis as the discharge diameter of the runner will permit. Provision is made so that the degree of wear of the renewable clearance rings may be inspected without taking down the turbine.

(Chapter VII, which will appear August 1, will discuss British Columbia)

THE PELTON WATER WHEEL CO.

Hydraulic Engineers

1991 Harrison Street
San Francisco, Calif.

100 Broadway
New York, N. Y.

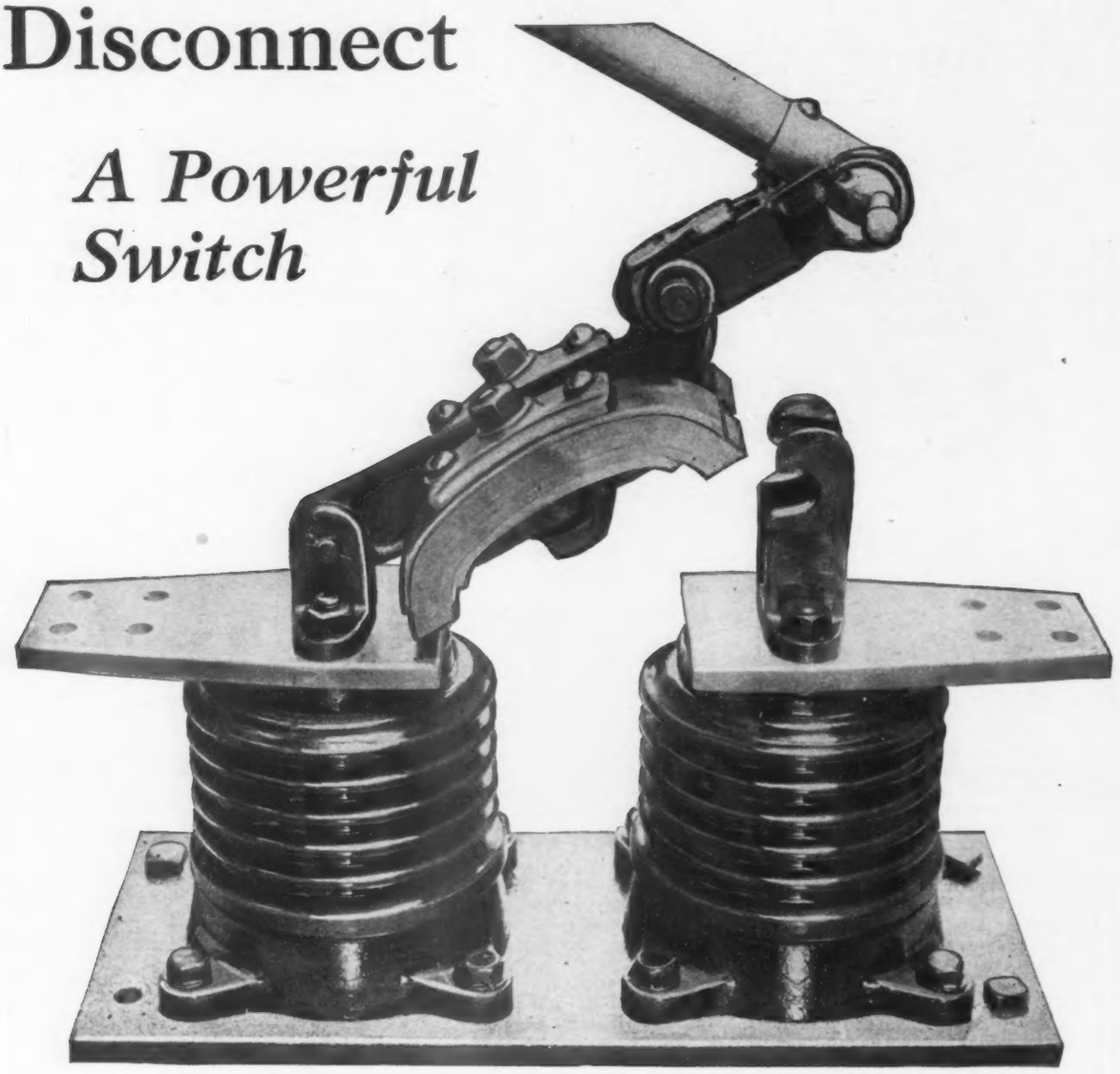
Associated Companies

Wm. Cramp & Sons Ship & Engine Bldg. Co.
I. P. Morris Department
Philadelphia, Pa.

Dominion Engineering Wks., Ltd.
Montreal

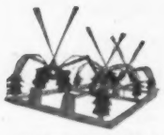
THE NIAGARA Disconnect

A Powerful Switch



Switchboard Control Switch

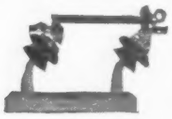
Outdoor Fuse Mountings



Air Break Switches

Indoor Choke Coils

Sectionalizing Switches



Outdoor Disconnecting Switches

Strain Type Disconnecting Switches

Outdoor Choke Coils

Western Representatives: C. E. INGALLS, Rialto Bldg., San Francisco, Cal.; EICHER & BRATT, 2107 L. C. Smith Bldg., Seattle, Wash.

ELPECO

Works right every time in an emergency

Many a disconnect works along all right and then in the emergency, it sticks—just when it is needed the worst. But the Niagara disconnect always works. It is easily operated by one man with an ordinary hook stick. Contact pressure of positive nature and definite magnitude is obtained by means of the simple eccentric action, and the same movement which applies pressure to the contacts also results in effectively locking the switch in closed position so that it cannot be forced open under short circuits.

And it is made in capacities up to 6000 amperes.

ELPECO

The home of Elpeco Products

The home of Elpeco Products was built because the engineers who specify and use high tension equipment have expressed their confidence in Elpeco apparatus which has been earned through consistent performance.

Every piece of Elpeco apparatus is designed from long and practical knowledge of the duty it is to perform. The result of such design is never matched by drafting room theory unchecked by the rugged realities of field experience.

ELPECO

ELECTRIC POWER EQUIPMENT CORPORATION

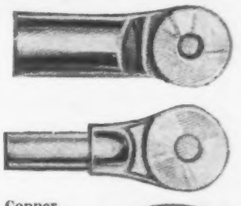
New Address
412-20 No. 18th St. PHILADELPHIA

Switchboard and Outdoor Substation Structural Fittings

Outdoor Bus Supports

Indoor Bus Supports

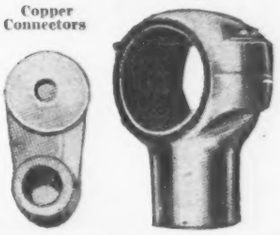
Bus Supports for Pipe Mounting


Copper Connectors

Indoor Disconnecting Switches

Porcelain Base Low Voltage Switches

Copper Fittings



Western Representatives: C. E. INGALLS, Rialto Bldg., San Francisco, Cal.; EICHER & BRATT, 2107 L. C. Smith Bldg., Seattle, Wash.

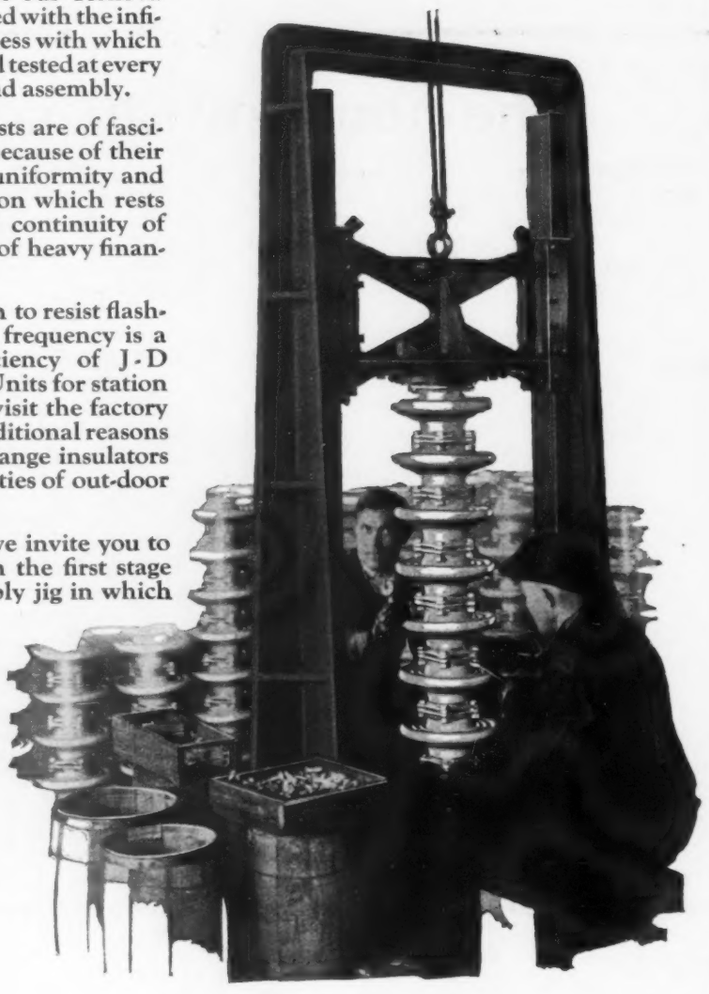
Sound Reasons Why J-D Insulators Protect Both Service and Investments

Visitors—always welcome at our Kenova plant—are especially impressed with the infinite care and scientific exactness with which J-D insulators are checked and tested at every stage of their manufacture and assembly.

These factory and routine tests are of fascinating interest to engineers because of their bearing on the ruggedness, uniformity and dependability of a product on which rests so much of the burden of continuity of service as well as the weight of heavy financial investment.

The ability of thick porcelain to resist flashover or puncture by high frequency is a basic reason for the efficiency of J-D interchangeable Post Type Units for station service. But if you were to visit the factory you would discover many additional reasons why you have found J-D flange insulators so superior for the heavy duties of out-door substations.

When you visit our plant we invite you to check with us all tests from the first stage to the last—the final assembly jig in which each flange type insulator, whether it is to be shipped rigidly assembled in posts or as an individual unit, is assembled in stacks to determine accuracy of height and alignment before crating.



No cement to crack or crumble under vibration or mechanical impact

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outlining suggested

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by

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Consulting Electrical Engineer
San Francisco

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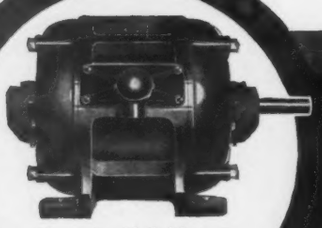

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TYPE N C 40° MOTOR

Operating a 35" Sturtevant Fan in a Cork Plant in Western Pennsylvania.

The room it is installed in is continuously filled with cork dust which is very inflammable and as thick as a heavy fog. In spite of the condition under which the Motor is running it is doing a corking good job.

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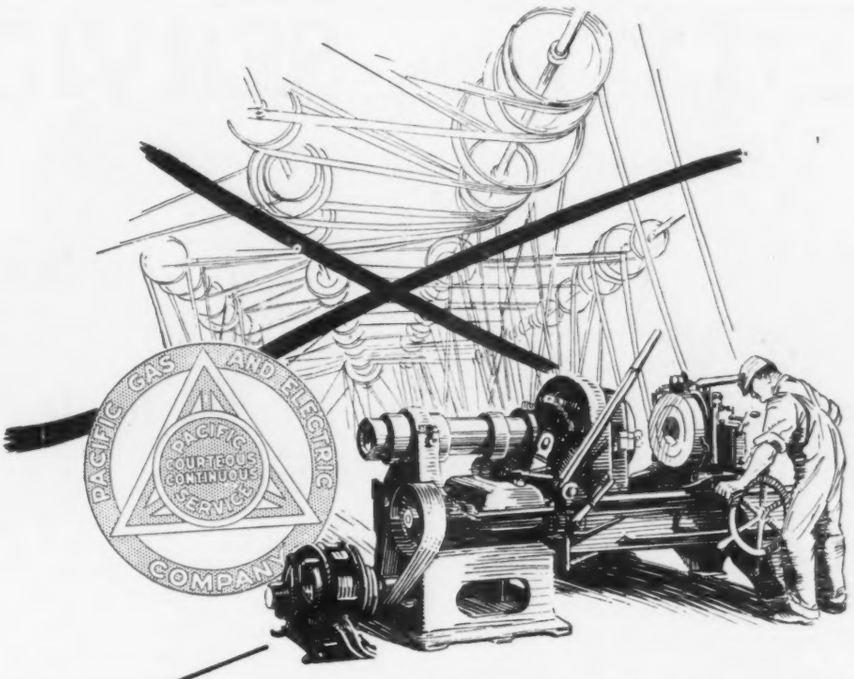

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Every foot of shafting and each bearing, pulley, hanger, clutch, collar, etc., in the power roadbed of your shop absorbs some of the power that should be delivered to the machines.

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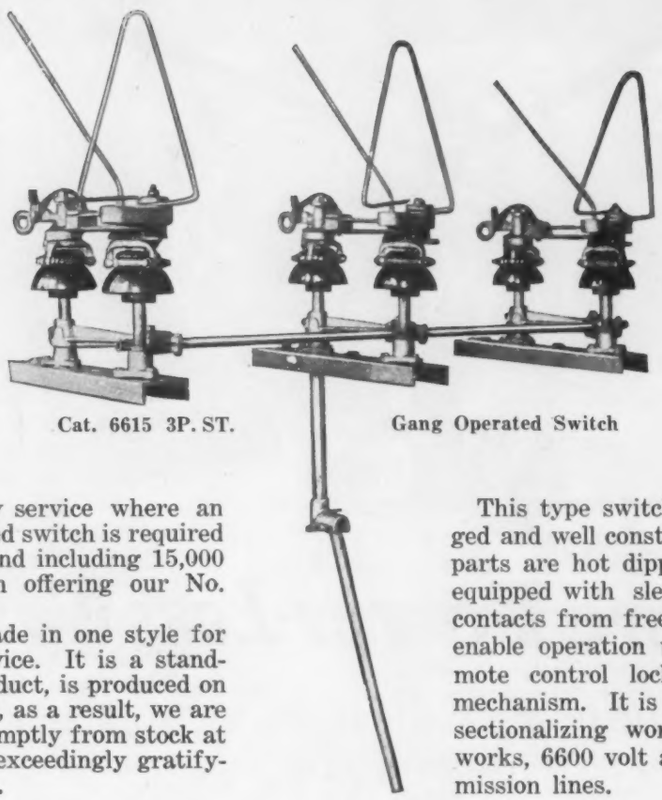

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This switch is made in one style for 2, 3 and 4 pole service. It is a standardized uniform product, is produced on a quantity basis and, as a result, we are able to supply it promptly from stock at a price that will be exceedingly gratifying to the customer.

This type switch is exceedingly rugged and well constructed. All corrosive parts are hot dipped galvanized. It is equipped with sleet hoods to prevent contacts from freezing, arcing horns to enable operation under load and a remote control lock open, lock closed mechanism. It is especially adapted for sectionalizing work on 4000 volt net works, 6600 volt and 13,200 volt transmission lines.

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JOURNAL OF ELECTRICITY

and get in touch with the man who has the equipment for sale

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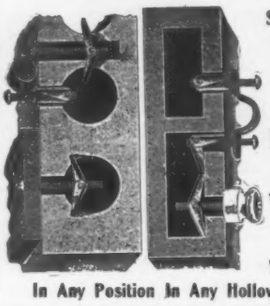

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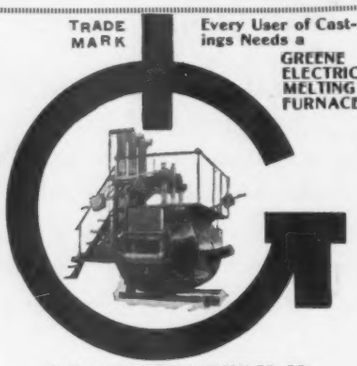

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This is the

Forged Steel Pin—four ⅞" holes on a 3" bolt circle in base

That supports the

Insulators used on R. & I. E. Equipment have largest factors of safety over operating voltage in flash-over values

That holds the

Pressed Steel Cap—four ⅞" slots on a 3" bolt circle in plate, spot welded to top of cap. No clamps, no set screws

That makes up the

R. & I. E. Interchangeable Insulator Units are exact duplicates. They are made to fit. Therefore they're easy to install. Their applications are unlimited.

Interchangeable Insulator Unit
that R. and I. E. Co. Builds

R. & I. E. Interchangeable Insulator Unit Equipment for outdoor service includes Bus Supports, Disconnecting Switches, Air Break Horn Gap Switches, Choke Coils, Fuse Holders, Lightning Arresters, Substation Combinations and Outdoor Steel Substations.

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Pacific Coast Representatives:
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1

Clifton Black Conduit
Clifton Galvanized Conduit

Manufactured by
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Perhaps it has never occurred to you that the Insulator Manufacturer is just such a man. You know, of course, that he comes in contact with many different types of Transmission Line Construction. But did you ever stop to think that with from his knowledge of other Systems, he may be able to give you just the idea that will help yours?

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Beat Competitive Bids without Sacrificing Profits

Your competitors who figure on using *ordinary* boxes haven't a chance to meet your figures and come out with a profit on the job, provided you use "Gem" Switch Boxes. For labor is the big item in a wiring job. And no other box can be installed so quickly as the "Gem."

There is no chasing back and forth to the shop for different sized boxes, or waiting for new ones to arrive, when you use the "Gem." You can take along a supply of single boxes and convert them into two or three-gang boxes right on the job when necessary, by removing one side and clamping on additional units. The only tool needed is a screw-driver.

If extra sides accumulate, you can order additional units to make up complete boxes, so there will be no parts wasted.

It is impossible to put the box together wrong because all sides are interchangeable.

There is no time wasted in removing knock-outs, either. A single blow of a hammer does the job. Boxes are all true to size, and screw holes are accurately tapped.

"Gem" Sectional Boxes can be used for either new or old work by simply reversing the ears.

NOTICE TO JOBBERS AND DEALERS

"Gem" Switch Boxes are protected by U. S. Letters Patent. Beware of imitations.

All infringers will be vigorously prosecuted.

The genuine boxes bear our trade mark "GEM" and are packed in individual green cartons bearing the name.

Other advantages are explained in our Catalog No. 29. Send for a copy.

"GEM" SECTIONAL SWITCH BOXES

CHICAGO FUSE MFG. CO.

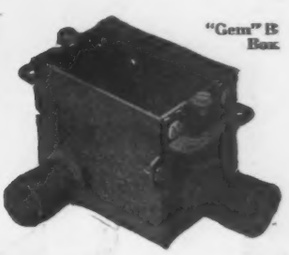
Illinois Elec. Co., Los Angeles Elec. Appliance Co., and Dunham, Carrigan & Hayden Co., San Francisco; Fobes Supply Co., Portland, Seattle, San Francisco and Oakland.

CHICAGO NEW YORK

"Gem" F Box

Covered by U. S. Patents Nos. 950502 March 1, 1910, and 1016925 Feb. 13, 1912.

"Gem" B Box



TRADE MARK

"NATIONAL" METAL MOLDING
UNDERWRITERS LABORATORIES INSPECTED MOLDING 300 VOLTS—1320 WATTS
Brings Electricity where needed
The most economical and safe way to make branch circuit extensions, change location of fixtures, install conveniently located receptacles to connect appliances, portable lamps, etc., is with the use of
National Metal Molding
It is the standard for surface wiring in either new or old work. It is a little less than one inch wide and one-half inch deep over all and will carry a maximum of four No. 14 or three No. 12 Single Braid Wires. There is also a complete line of Metal Molding Fittings to insure neat and inconspicuous work. Metal Molding may be painted any color — its Sherardized (rust proof) surface readily receives and holds either water or oil paints.
Send for a copy of the Metal Molding Handbook compiled especially for the man on the job
National Metal Molding Company
1325 FULTON BUILDING
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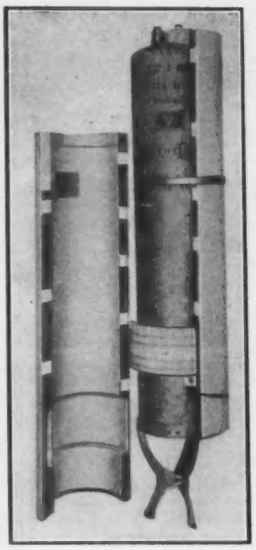
The A & F Electric Water Heater

(no plumbing required)

Under "Fibreform" Range Boiler Cover



The Fibreform range boiler cover makes possible the use of a smaller heating unit, to get more and hotter water and lower bills.

A bare tank will waste all the heat from a small electric element without ever reaching the boiling point. The 2½ inch wall of the Fibreform cover stops this continuous loss and brings hot water luxury within reach of every home.

The ideal system of hot water storage at least loss is accomplished by the A & F plastic heater (no plumbing required) and Fibreform cover — many thousands in use.

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Manufactured by

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The 1923 Edition of the Public Utilities volume has just been completed and deliveries are being made. Subscriptions filed now will receive prompt shipment. The cost is $20, including Monthly Supplements of Earning Reports and Rating Bulletins. ∴ ∴ ∴ ∴

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Orange, California

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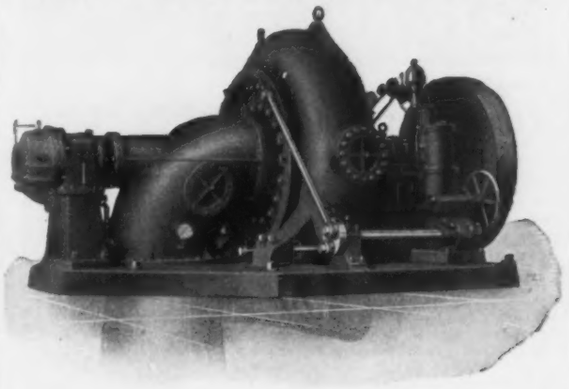

Above is one of three single, horizontal shaft hydraulic turbine units, in successful operation in the Pyrenees Mountains in southern France. Each unit develops 3200 H.P. at 500 R.P.M. under 328 ft. head.

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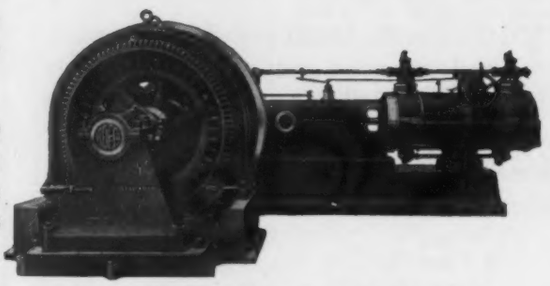
Combining as it does the essential features of the Unaflow principle—with the traditional RIDGWAY thoroughness of construction, it is a favorite of practically every engineer that has made an accurate comparison.



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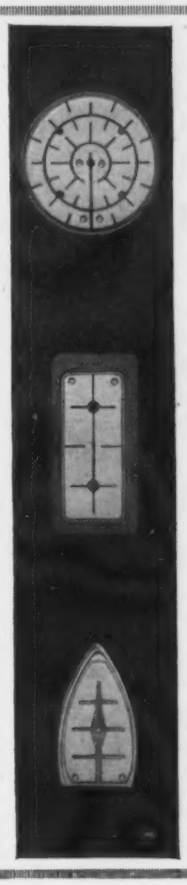

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Manufacturers who have taken up our challenge to put "Chromalox" Units on competitive test have proven to their own satisfaction that **our claims are justified** and the proof of this superiority is that they are using "Chromalox" Units.

The main shortcoming of electric units has been lack of "speed." With "Chromalox" Units it is possible to obtain speed comparable to results obtained by gas. In other words it is possible to **safely deliver more heat per given area** with "Chromalox" Units than with any other electric unit.

Write us without delay stating your requirement.

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Durable ***Efficient***

Transmission Towers

are world famous for their fine structural quality, superior design, great strength. They stand up through years of service. Ask the "BLAW KNOX" Engineers to consult with you on your requirements.

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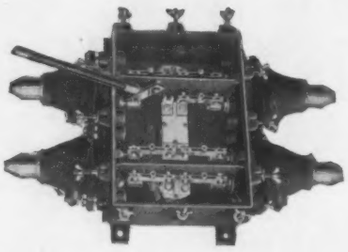
TOWERS OF Strength

CABLE TERMINAL DEVICES



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For High and Low-tension Circuits
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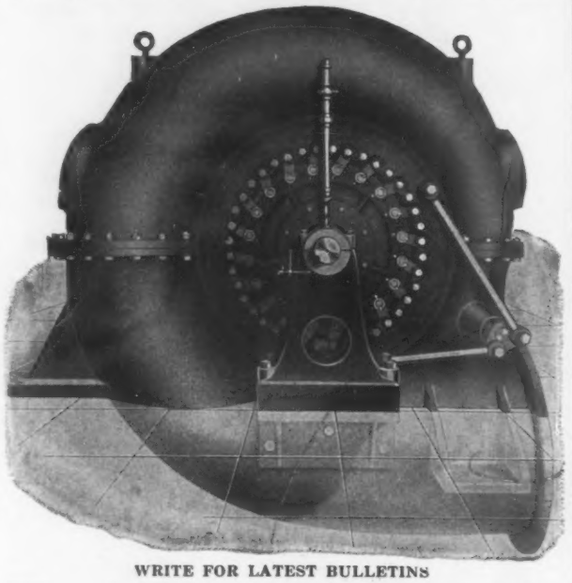
LEFFEL
TURBINE WATER WHEELS



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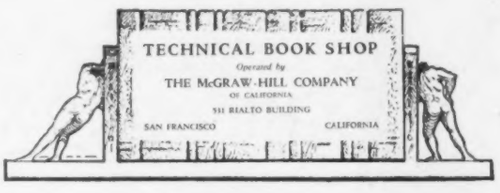
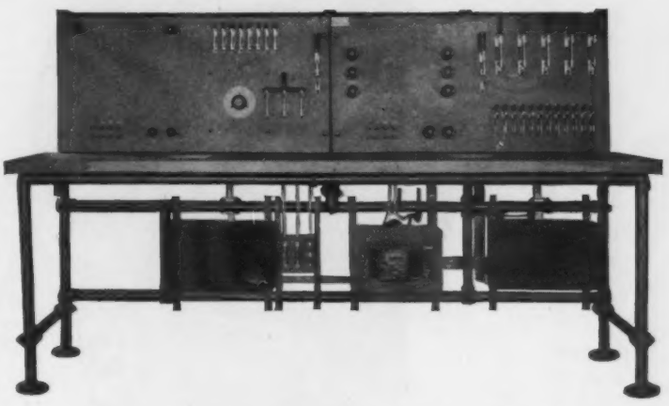


Put a STATES Meter Test Table to Work for you



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Duncan Electric Manufacturing Co.

Lafayette, Indiana

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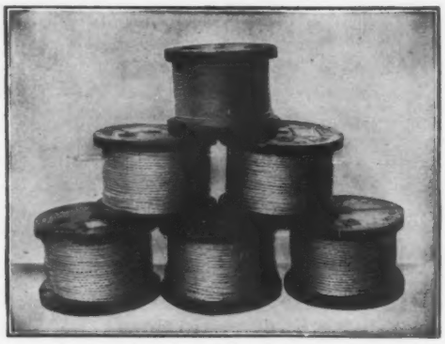

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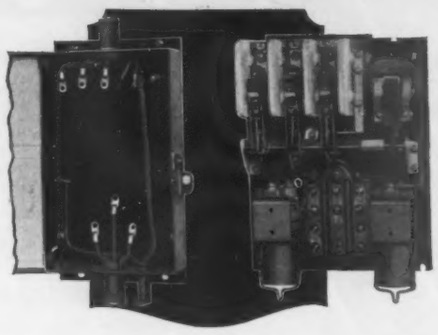
Easy to Wire-Easy to Maintain
CLASS 8527
AUTOMATIC STARTER



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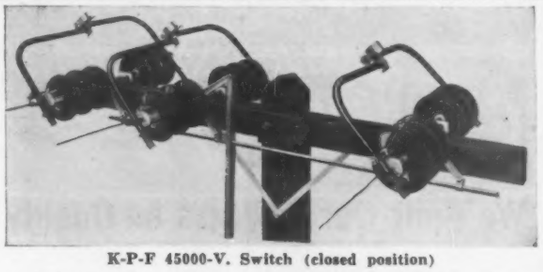
California Representative



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Clusters
Benjamin Electric Mfg. Co.
Pacific States Electric Company
Western Electric Company

Coils
Crocker-Wheeler Company
Delta-Star Electric Co.
Electric Appliance Company
General Electric Company
Pacific States Electric Company
Railway and Industrial Engr. Co.
Schweitzer & Conrad, Inc.
States Company, The
Western Electric Company
Westinghouse Electric & Mfg. Co.

Compounds, Insulating and Splicing
Appleton Rubber Co.
Baker-Joslyn Company
Johns-Manville, Inc.
Mineralac Electric Co.
Okonite Company, The
Pacific States Electric Company
Standard Underground Cable Co.
V.V. Fittings Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Condensers, Steam
Allis-Chalmers Mfg. Company
Moore & Company, Chas. C.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Conductors, Armored
Baker-Joslyn Company
National Metal Molding Co.

Conduit
Allied Industries, Inc.
American Wiremold Co.
Baker-Joslyn Cmpany
Clifton Mfg. Co.
Electric Appliance Company
Johns-Manville, Inc.
National Metal Molding Company
Pacific States Electric Company
Sprague Electric Works
Tubular Woven Fabric Co.
Western Electric Company

Conduit Fittings
American Wiremold Co.
Baker-Joslyn Company
Chicago Fuse Mfg. Co.
Electric Appliance Company
National Metal Molding Company
Pacific States Electric Company
Reiman Wholesale Elec. Co.
Sprague Electric Works
V.V. Fittings Company
Western Electric Company

Connectors
Sherman Mfg. Company, H. B.
States Company, The
Westinghouse Electric & Mfg. Co.

Contactors, A.C. and D.C.
Cutler-Hammer Mfg. Co.
Electric Controller & Mfg. Co.
General Electric Company
Industrial Controller Co.
Westinghouse Electric & Mfg. Co.

Controllers, Motor
Crocker-Wheeler Company
Cutler-Hammer Mfg. Co.
Electric Appliance Company
Electric Controller & Mfg. Co.
General Electric Company
Industrial Controller Co.
Wagner Electric Corporation
Western Electric Company
Westinghouse Electric & Mfg. Co.

Converters
General Electric Company
Wagner Electric Corporation
Westinghouse Electric & Mfg. Co.

Cord
Baker-Joslyn Company
Collyer Insulated Wire Co.
Electric Appliance Company
Okonite Company, The
Pacific States Electric Company
Rockbestos Products Corp.
Simplex Wire & Cable Co.
Tubular Woven Fabric Co.
Western Electric Company

Cut-Outs
Arrow Electric Company
Chicago Fuse Mfg. Co.
D & W Fuse Works of G. E. Co.
Johns-Pratt Company, The
Schweitzer & Conrad, Inc.
Ward Leonard Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Dimmers, Theater
Cutler-Hammer Mfg. Co.
General Electric Company
Ward Leonard Electric Company

Dynamos
Allis-Chalmers Mfg. Company
Crocker-Wheeler Company
General Electric Company
Holtzer-Cabot Elec. Co.
Peerless Electric Co.
Ridgway Dynamo & Engine Co.
Wagner Electric Corporation
Westinghouse Electric & Mfg. Co.

Engineers, Construction
Stone & Webster, Inc.

Engines, Gas and Steam
Allis-Chalmers Mfg. Company
Moore & Company, Chas. C.
Westinghouse Electric & Mfg. Co.

Fans, Portable, Ceiling
Electric Appliance Company
General Electric Company
Pacific States Electric Company
Robbins & Myers Company
Sprague Electric Works
Western Electric Company
Westinghouse Electric & Mfg. Co

Fans, Exhaust
Allis-Chalmers Mfg. Company
Pacific States Electric Company
Sprague Electric Works
Western Electric Company
Westinghouse Electric & Mfg. Co

Fault Finders, Electric
Electric Controller & Mfg. Co.
Rawson Elec. Instrument Co.
Roller-Smith Company
Westinghouse Electric & Mfg. Co.

Fibre
Johns-Manville, Inc.
Pacific States Electric Company
Westinghouse Electric & Mfg. Co.

Fixtures, Fixture Parts
Arrow Electric Company
Benjamin Electric Mfg. Company
Cole & Company, C. W.
Duplex Lighting Works
Electric Appliance Company
Guth Company, Edwin F.
Harvey Hubbell, Inc.
National Metal Molding Co.
National X-Ray Reflector Co.
Pacific States Electric Company
Pass & Seymour
Sherman Mfg. Company, H. B.
V.V. Fittings Company
Western Electric Company

Flash Lights, Electric
Electric Appliance Company
Pacific States Electric Company
Trumbull Electric Mfg. Company
Western Electric Company

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General Electric Company
National X-Ray Reflector Co.
Westinghouse Electric & Mfg. Co.

Fuses and Fuse Specialties
Baker-Joslyn Company
Chicago Fuse Mfg. Company
D & W Fuse Works of G. E. Co.
Electric Appliance Company
Federal Electric Company
Johns-Pratt Company, The
Pacific States Electric Company
Schweitzer & Conrad, Inc.
Trico Fuse Mfg. Co.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Governors
Allis-Chalmers Mfg. Company
General Electric Company
Pelton Water Wheel Co.

Guards, Lamp
Benjamin Electric Mfg. Company
Harvey Hubbell, Inc.
Matthews & Bro., Inc., W. N.
Pacific States Electric Company
Western Electric Company

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Baker-Joslyn Company
Hubbard & Company
Pacific States Electric Company
Standard Underground Cable Co
The Ohio Brass Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Headlights, Electric
General Electric Company
Westinghouse Electric & Mfg. Co.

Heating Elements
Wiegand Co., Edwin L.

Heating Appliances, Domestic
Cutler-Hammer Mfg. Co.
Edison Electric Appliance Co.
Electric Appliance Company
General Electric Company
Hicks, W. Wesley
Magee Furnace Co.
Northern Electric Co.
Reiman Wholesale Elec. Co.
Waage Electric Co.
Walker & Pratt Mfg. Co.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Hoists, Electric
Moore & Company, Chas. C.
Sprague Electric Works

Hoods, Street
Benjamin Electric Mfg. Company
Pacific States Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Industrial Signals
Benjamin Electric Mfg. Company
Cory & Son, Inc., Chas.

Instruments, Recording, Testing
Electric Appliance Company
Jewell Elec. Instrument Co.
Johns-Manville, Inc.
Pacific States Electric Company
Roller-Smith Company
Sangamo Electric Co.
Schweitzer & Conrad, Inc.
States Company, The
Western Electric Company
Weston Elec. Instrument Co.

Insulators
Baker-Joslyn Company
Electric Appliance Company
General Electric Company
Hemingray Glass Co.
Jeffery-Dewitt Insulator Co.
Johns-Manville, Inc.
Lapp Insulator Co., Inc.
Locke Insulator Corp.
Pacific States Electric Company
The Ohio Brass Company
Thomas & Sons Company, R.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Insulating Material
Baker-Joslyn Company
Clapp & LaMoree
Cutler-Hammer Mfg. Co.
D & W Fuse Works of G. E. Co.
Delta-Star Electric Co.
Electric Appliance Company
General Electric Company
Johns-Manville, Inc.
Mica Insulator Co.
Standard Underground Cable Co.
Westinghouse Electric & Mfg. Co.

Lamps, Incandescent
Edison Lamp Works
Electric Appliance Company
Mazda Service of G. E. Co.
National Lamp Works
Pacific States Electric Company
Reiman Wholesale Elec. Co.
Western Electric Company
Westinghouse Lamp Company

Lamp Standards
Pacific States Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Lighting Outfits
Cole & Company, C. W.
Guth Company, Edwin F.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Lightning Arresters
General Electric Company
Railway and Industrial Engr. Co.
Westinghouse Electric & Mfg. Co.

Line Material, Pole, Railway
Baker-Joslyn Company
Electric Appliance Company
General Electric Company
Hubbard & Company
Johns-Manville, Inc.
Locke Insulator Corp.
Pacific States Electric Company
The Ohio Brass Company
Thomas & Sons Company, R.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Locknuts & Bushings
Baker-Joslyn Company
Electric Appliance Company
National Metal Molding Co.

Machinery, Mining
Allis-Chalmers Mfg. Company
General Electric Company

Magnets, Lifting
Cutler-Hammer Mfg. Co.
Electric Controller & Mfg. Co.
Ohio Electric & Controller Co.

Marine Lighting & Signaling Apparatus
Benjamin Electric Mfg. Co.
General Electric Company
Westinghouse Electric & Mfg. Co.

Meters
Duncan Electric Mfg. Co.
Electric Appliance Company
General Electric Company
Jewell Elec. Instrument Co.
Rawson Elec. Instrument Co.
Roller-Smith Company
Sangamo Electric Co.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Meter Testers
Johns-Pratt Company, The
Roller-Smith Company
States Company, The

Molding, Metal, Wood
American Wiremold Co.
Electric Appliance Company
National Metal Molding Company
Pacific States Electric Company
Western Electric Company

Motors, A.C., D.C.
Allis-Chalmers Mfg. Company
Crocker-Wheeler Company
Electric Appliance Company
Electric Controller & Mfg. Co.
General Electric Company
Holtzer-Cabot Elec. Co.
Howell Electric Motors Company
Ohio Electric & Controller Co.
Robbins & Myers Company
Sprague Electric Works
Valley Electric Co.
Wagner Electric Corporation
Western Electric Company
Westinghouse Electric & Mfg. Co.

Motor Generators
General Electric Company
Ridgway Dynamo & Engine Co.
Sprague Electric Works
Wagner Electric Corporation
Western Electric Company
Westinghouse Electric & Mfg. Co.

Motor Starters
Condit Electrical Mfg. Co.
Crocker-Wheeler Company
Cutler-Hammer Mfg. Co.
Electric Controller & Mfg. Co.
General Electric Company
Industrial Controller Co.
Pacific States Electric Company
Trumbull Electric Mfg. Co.
Wagner Electric Corporation
Ward Leonard Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co

Oil Burners and Systems
Moore & Company, Chas. C.

Oil Fuse Cutouts, Aerial and Underground
D & W Fuse Works of G. E. Co.

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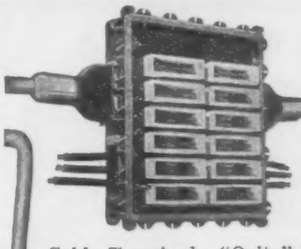

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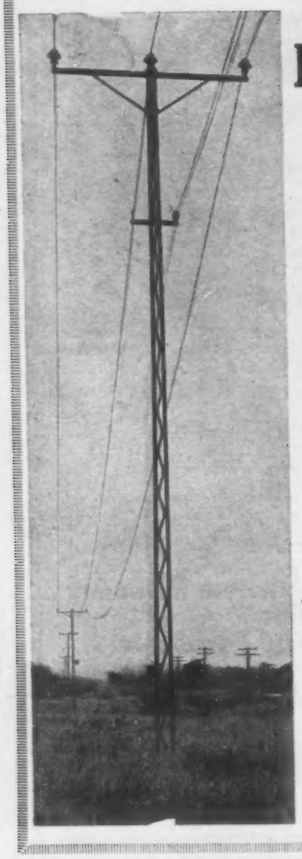

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National Metal Molding Co.

Ozonators
Pacific States Electric Company
Sprague Electric Works

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Electric Appliance Company
Johns-Manville, Inc.
Pacific States Electric Company
Westinghouse Electric & Mfg. Co.

Paint Sprayers
Matthews & Bro., Inc., W. N.

Panel Boards, Panels
Benjamin Electric Mfg. Company
Cutler-Hammer Mfg. Co.
Electric Appliance Company
Pacific States Electric Company
Sprague Electric Works
Ward Leonard Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Pins, Wood, Iron, Steel
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Hubbard & Company
Locke Insulator Corp.
Pacific States Electric Company
Thomas & Sons Company, R.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Pipe, Pressure
Kellogg Company, The M. W.
Lacy Mfg. Co.
National Tube Co.

Plates, Flush Switch
Pacific States Electric Company
Western Electric Company

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Bard-Parker Co., Inc.
Rubber Insulated Metals Corp.

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Beaver Machine & Tool Co.
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Bryant Electric Co.
Connecticut Elec. Mfg. Co.
Cutler-Hammer Mfg. Co.
Electric Appliance Company
Hart & Hegeman Mfg. Co.
Harvey Hubbell, Inc.
National X-Ray Reflector Co.
Pacific States Electric Company
Pass & Seymour
V.V. Fittings Company
Western Electric Company

Poles, Iron, Steel, Wood
Baker-Joslyn Company
Bates Expanded Steel Truss Co.
Blaw-Knox Company
Pacific Coast Steel Co.
Pacific States Electric Company
Western Electric Company

Pole Jacks
Templeton, Kenly & Co., Ltd.

Pole Supports
Clark-Williams Eng. Co., Inc., The

Porcelain Specialties
Baker-Joslyn Company
Electric Appliance Company
Locke Insulator Corp.
Thomas & Sons Company, R.

Potheads
G & W Electric Specialty Co.
Johns-Manville, Inc.
Standard Underground Cable Co.
Westinghouse Electric & Mfg. Co.

Power Plants
Allis-Chalmers Mfg. Company
General Electric Company
Moore & Company, Chas. C.
Westinghouse Electric & Mfg. Co.

Projectors, Electric
General Electric Company
National X-Ray Reflector Co.
Westinghouse Electric & Mfg. Co.

Protective Devices
Condit Electrical Mfg. Co.
Roller-Smith Company

Pumps
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Pelton Water Wheel Company
Westinghouse Electric & Mfg. Co.
Worthington Pump & Machy. Corp.

Push Buttons
Arrow Electric Company
Benjamin Electric Mfg. Company
Electric Appliance Company
Electric Controller & Mfg. Co.
Holtzer-Cabot Elec. Co.
Pacific States Electric Company
Western Electric Company

Radio Apparatus
Manhattan Elec. Supply Co.
Roller-Smith Company

Rail Bonds
General Electric Company
The Ohio Brass Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Rectifiers
Electric Appliance Company
General Electric Company
Pacific States Electric Company
Wagner Electric Mfg. Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Reflectors
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Duplex Lighting Works
Harvey Hubbell, Inc.
Ivanhoe Regent Works
National X-Ray Reflector Co.
Pacific States Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Regulators, Voltage
General Electric Company
Ward Leonard Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Reinforcing Bars
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Condit Electrical Mfg. Co.
Electric Controller & Mfg. Co.
General Electric Company
Roller-Smith Company
Westinghouse Electric & Mfg. Co.

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General Electric Company
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Western Electric Company
Westinghouse Electric & Mfg. Co.

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Electric Appliance Company
Electric Controller & Mfg. Co.
General Electric Company
Pacific States Electric Company
Ward Leonard Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Rosettes
Arrow Electric Company
General Electric Company
Pass & Seymour

Screw Drivers, Rubber Insulated
Rubber Insulated Metals Corp.

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Pacific States Electric Company

Signal Systems
Holtzer-Cabot Elec. Co.

Solder, Self-fluxing, Solid Wire and Bar
Baker-Joslyn Company
Pacific States Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Solenoids
Electric Controller & Mfg. Co.
Westinghouse Electric & Mfg. Co.

Steel, Fabricated
Blaw-Knox Company

Steel, Structural
Pacific Coast Steel Co.

Street Lighting
General Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Strippers, Wire
Bard-Parker Co., Inc.

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Delta-Star Electric Co.
Electrical Engineers Equip. Co.
Railway and Industrial Engineering Co.
Schweitzer & Conrad, Inc.
Westinghouse Electric & Mfg. Co.

Subway Boxes
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Baker-Joslyn Company
Condit Electrical Mfg. Co.
Electric Appliance Company
Elec. Power Equipment Corp.
General Electric Company
Pacific States Electric Company
Trumbull Elec. Mfg. Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Switches, Automatic Time
Anderson Mfg. Co., Albert & J. M.

Switches, High Tension
Allis-Chalmers Mfg. Company
Condit Electrical Mfg. Co.
Delta-Star Electric Co.
Electrical Engineers Equip. Co.
Elec. Power Equipment Corp.
General Electric Company
K-P-F Electric Co.
Matthews & Bro., Inc., W. N.
Railway and Industrial Engineering Co.
Schweitzer & Conrad, Inc.
Westinghouse Electric & Mfg. Co.

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Arrow Electric Co.
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Benjamin Electric Mfg. Co.
Condit Electrical Mfg. Co.
Connecticut Elec. Mfg. Co.
Cutler-Hammer Mfg. Co.
Electric Appliance Company
Elec. Fower Equipment Corp.
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Reiman Wholesale Elec. Co.
Square D Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

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Condit Electrical Mfg. Co.
Cutler-Hammer Mfg. Co.
Electric Appliance Company
Electric Controller & Mfg. Co.
Elec. Power Equipment Corp.
General Electric Company
Industrial Controller Co.
Johns-Pratt Company, The
Pacific States Electric Company
Schweitzer & Conrad, Inc.
Trumbull Electric Mfg. Co.
Western Electric Company
Westinghouse Electric & Mfg. Co.

Tanks, Iron & Steel
Blaw-Knox Company

Tape, Friction, Rubber
Appleton Rubber Co.
Baker-Joslyn Company
Clifton Mfg. Co.
Diamond Holfast Sales Co., H. I.
Electric Appliance Company
General Electric Company
Johns-Manville, Inc.
New York Insulated Wire Co.
Okonite Company, The
Pacific States Electric Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Telephone Equipment
Holtzer-Cabot Elec. Co.
Johns-Manville, Inc.
Pacific States Electric Company
Western Electric Company

Terminals
States Company, The

Tools, Construction
Baker-Joslyn Company
Electric Appliance Company
Hubbard & Company
Oshkosh Mfg. Co.
Pacific States Electric Company
Western Electric Company

Toys, Electric
Lionel Corp., The

Towers, Steel
Bates Expanded Steel Truss Co.
Blaw-Knox Company
Judson Mfg. Co.
Pacific Coast Steel Co.

Transformers
Allis-Chalmers Mfg. Company
Crocker-Wheeler Company
Duncan Electric Mfg. Company
General Electric Company
Pacific States Electric Company
Packard Electric Co., The
States Company, The
Wagner Electric Corporation
Western Electric Company
Westinghouse Electric & Mfg. Co.

Trolley Line Material
Baker-Joslyn Company
Brill Company, The J. G.
Electric Appliance Company
General Electric Company
Johns-Manville, Inc.
Pacific States Electric Company
The Ohio Brass Company
Western Electric Company
Westinghouse Electric & Mfg. Co.

Turbines, Hydraulic, Water Wheels
Allis-Chalmers Mfg. Company
Cramp & Sons Co., The Wm.
Leffel & Co., The James
Pelton Water Wheel Company
Smith Company, S. Morgan
Worthington Pump & Machy. Corp.

Turbines, Steam
Allis-Chalmers Mfg. Company
General Electric Company
Ridgway Dynamo & Engine Co.
Westinghouse Electric & Mfg. Co.

Vibrators
Halliwell Electric Co.
Shelton Electric Co.

Water Heaters
Hicks, W. Wesley
Washington Electric Supply Co.

Welding Apparatus, Electric
General Electric Company
Pacific States Electric Company
The Ohio Brass Company
Western Electric Company

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American Ins. Wire & Cable Co.
Anaconda Copper Mining Co.
Baker-Joslyn Company
Electric Appliance Company
Pacific States Electric Company
Phillips Wire Co.
Rockbestos Products Corp.
Roebling's Sons Co.
Rome Wire Co.
Simplex Wire & Cable Co.
Standard Underground Cable Co.
Western Electric Company

Wire, Covered, Enamelled, Galvanized
American Ins. Wire & Cable Co.
Baker-Joslyn Company
California Wire Co.
Collyer Insulated Wire Co.
Electric Appliance Company
Indiana Rubber & Insul. Wire Co.
Indiana Steel & Wire Co.
Johns-Manville, Inc.
National Metal Molding Co.
New York Insulated Wire Co.
Okonite Company, The
Pacific States Electric Company
Peerless Ins. Wire & Cable Co.
Phillips Wire Co.
Reiman Wholesale Elec. Co.
Rockbestos Products Corp.
Roebling's Sons Co.
Rome Wire Co.
Simplex Wire & Cable Co.
Sprague Electric Works
Standard Underground Cable Co.
Western Electric Company

Wiring Devices
Connecticut Elec. Mfg. Co.
Hubbell, Inc., Harvey
Porter Electric Co.

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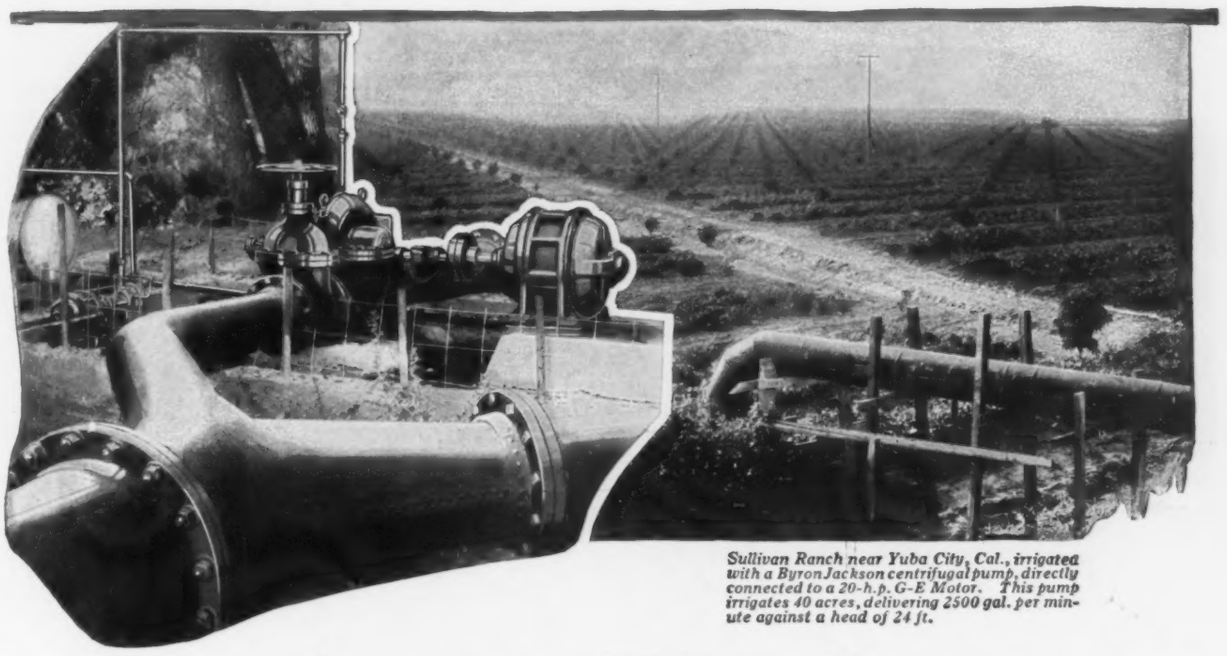

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